HITACHI

PA **No. 0090**

32CX33B/CY61

SERVICE MANUAL

NTSC **A3LXU3**

R/C: CLU-418U

Models 32CX33B and 32CX11B are in the same Solid State Color Television family. The difference between the 32CX33B and the 32CX11B is the remote control and the CRT. Please refer to model 32CX11B schematics, assembly, wiring, test, and troubleshooting information when servicing model 32CX33B. Refer to Service Manual PA No. 0065 issued in June 1996. Refer to Service Manual PA No. 0071 and PA No. 0053 for the technical information regarding the "Description of Circuit" and "IC's and Transistors Functions" issued in August 1996 and November 1995 respectively.

32CX38B 32TX78B 32TX79K 35TX88B 35TX89K

REPLACEMENT PARTS LIST

This parts list only gives parts which are different from the service manual PA No. 0065.
PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this service manual. Do not degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	DESCRIPTION
N201	QR20881	Instruction Book English
N201	QR20891	Instruction Book French
E301	HL00234	Remote Control CLU-418U
E601	BY00821	DY-32V 110°SVC
V1	DE01371	CRT A80LJF30X (W)
SP451	GK00261	5 Watts/4 Ohms
SP452	GK00261	5 Watts/4 Ohms

PECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

SOLID STATE COLOR TELEVISION

JUNE 1997 **HHEA-MANUFACTURING DIVISION**

HITACHI

SERVICE MANUAL

NTSC | **A3LXU3**

PA **No. 0097**

32CX38B/CY61

R/C: CLU-418U

Models 32CX38B and 32CX11B are in the same Solid State Color Television family. The difference between the 32CX38B and the 32CX11B is the remote control and the CRT. Please refer to model 32CX11B schematics, assembly, wiring, test, and troubleshooting information when servicing model 32CX38B. Refer to Service Manual PA No. 0065 issued in June 1996. Refer to Service Manual PA No. 0071 and PA No. 0053 for the technical information regarding the "Description of Circuit" and "IC's and Transistors Functions" issued in August 1996 and November 1995 respectively.

REPLACEMENT PARTS LIST

This parts list only gives parts which are different from the service manual PA No.0065.
PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this service manual. Do not degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	DESCRIPTION
N201	QR25351	Instruction Book English
N201	QR25361	Instruction Book French
E301	HL00234	Remote Control CLU-418U
E601	BY00821	DY-32V 110° SVC
V1	DE01371	CRT A80LJF30X (W)
SP451	GK00261	5 Watts/4 Ohms
SP452	GK00261	5 Watts/4 Ohms

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

SOLID STATE COLOR TELEVISION

MARCH 1998 **HHEA-MANUFACTURING DIVISION**

HITACHI

PA **No. 0065**

32CX11B/CY61
32TX78B/CY60
32TX79K/CY60
35CX30B/CZ63
35TX88BCZ63
35TX89K/CZ63

R/C: CLU-418U
CLU-419UI

SERVICE MANUAL

NTSC A3LXU3 CHASSIS

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

This television receiver will display television Closed Captioning (CC or ▭) in accordance with paragraph 15.119 of the FCC rules.

TABLE OF CONTENTS

SAFETY PRECAUTIONS 2
PRODUCT SAFETY NOTICE 3
POWER SOURCE 3
TECHNICAL SPECIFICATIONS 4
TECHNICAL CAUTIONS 5
ADJUSTMENT SPECIFICATIONS 6
WAVEFORMS AT EACH SECTION 26
TROUBLESHOOTING FLOWCHARTS 28
REPLACEMENT PARTS LIST 31
NOTES 48
WIRING DRAWING OF 32CX11B/CY61 FINAL ASS'Y 51
WIRING DRAWING OF 32TX78B/79K/CY60 FINAL ASS'Y 52
WIRING DRAWING OF 35CX30B/CZ63 FINAL ASS'Y 53
WIRING DRAWING OF 35TX88B/89K/CZ63 FINAL ASS'Y 54
PRINTED WIRING BOARD FOIL PATTERN (MAIN) 55
PRINTED WIRING BOARD FOIL PATTERN (PinP) 56
CIRCUIT SCHEMATIC DIAGRAM OF 32CX11B/CY60 and 32TX78B/79K/CY61 57
CIRCUIT SCHEMATIC DIAGRAM OF 35CX30B/CZ63 and 35TX88B/89K/CZ63 61
CIRCUIT SCHEMATIC DIAGRAM OF P in P 65

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

SOLID STATE COLOR TELEVISION

JUNE 1996 **HHEA - MANUFACTURING DIVISION**

SAFETY PRECAUTIONS

NOTICE: Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

WARNING: Since the chassis of this receiver is connected to one side of the AC power supply during operation, whenever the receiver is plugged in, service should not be attempted by anyone unfamiliar with the precautions necessary when working on this type of receiver.

The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away from the picture tube while handling.
2. When service is required, an isolation transformer should be inserted between power line and the receiver before any service is performed on a "HOT" chassis receiver.
3. When replacing a chassis in the receiver, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment cover-shields, isolation resistors, capacitors, etc.
4. When service is required, observe the original lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Critical components as indicated on the circuit diagram should not be replaced by another manufacturer's. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced receiver to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the receiver by the manufacturer has become defective, or inadvertently defeated during servicing.

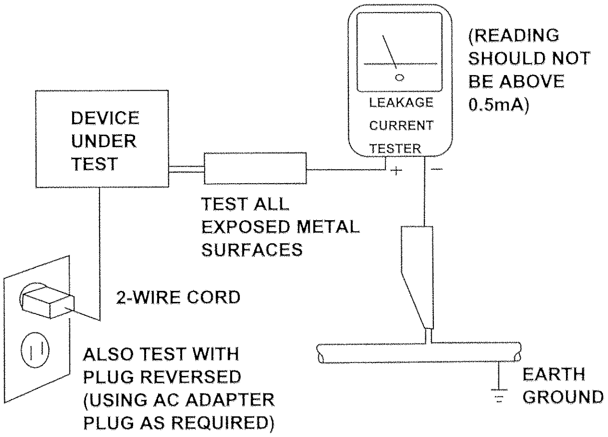
Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch ON using an insulation tester (DC500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis should have a minimum resistor reading of 0.24MΩ and a maximum resistor reading of 5.2MΩ . Any resistance value below or above this range indicates an abnormality which requires corrective action. Exposed metal part not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into an AC 120V 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power ON. Using a "Leakage Current Tester (Simpson's Model 229 or equivalent)", measure for current from all exposed metal parts of the cabinet (antennas, screwheads, overlays, control shafts, etc.) particularly any exposed metal part having a return path to the chassis or to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.


LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5mA)
DEVICE UNDER TEST
+
−
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

AC LEAKAGE TEST

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE RECEIVER TO THE CUSTOMER.

High Voltage

This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit is operated correctly.

Serviceman Warning

With minimum BRIGHTNESS and CONTRAST, the operating high voltage in this receiver is lower than 37.0kV. In case any component having influence on the high voltage is replaced, confirm that high voltage with minimum BRIGHTNESS and CONTRAST is lower than 37.0kV. To measure high voltage use a high impedance High Voltage Meter. Connect (-) to chassis earth and (+) to the CPT Anode button (See the following connection diagram).

NOTE: Turn the power switch OFF without fail before the connection to the Anode button is made.

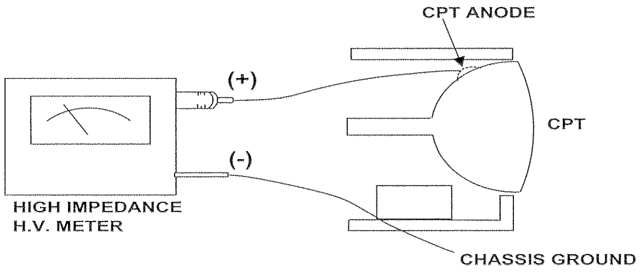
PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in HITACHI television receivers have special safety related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacements parts which have these special safety characteristics are identified in this Model Service Manual.

Electrical components having such features are identified with an ⚠ mark in the schematics and parts list in this Model Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Model Service Manual, may create shock, fire, X-Radiation, or other hazards.

Production Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies of HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.



X-Radiation

TUBE: The primary source of X-Radiation in this receiver is the picture tube. The tube utilized in this chassis is specially constructed to limit X-Radiation emission. For continued X-Radiation protection, the replacement tube must be the same type as the original HITACHI approved type.

When troubleshooting and making test measurements in a receiver with an excessive high voltage problem, avoid coming unnecessarily close to the picture tube and the high voltage component.

Do not operate the chassis longer than is necessary to locate the cause of the excessive voltage.

This Service Manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the product and its safety. Consumers should not risk trying to do the necessary repairs and should instead refer to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm
(California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components with lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

SAFETY NOTICE
USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by ⚠ on the parts list in this Model Service Manual and its supplements and bulletins. Before servicing this, it is important that the service technician read and follow the "Safety Precautions" and the "Product Safety Notices" in this Service Manual.

For continued X-Radiation protection, replace picture tube with original type or Hitachi equivalent type.

POWER SOURCE

This television receiver is designed to operate on 120 Volts/60Hz, AC house current. Insert the power cord into a 120 Volts/60Hz outlet.

NEVER CONNECT THE TV TO OTHER THAN THE SPECIFIED VOLTAGE OR TO DIRECT CURRENT.

Use of this TV set in 50 Hz areas will not harm the TV set, However, it will cause the clock display to run slower. Consult service personnel if you move to an area where the power supply frequency is 50 Hz.

CLOCK	60Hz	50Hz
D022	Install	Delete

TECHNICAL SPECIFICATIONS

POWER RATINGS

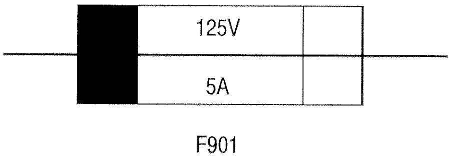
32CX11B/CY61	180 watts
32TX78B/79K/CY60	180 watts
35CX30B/CZ63	180 watts
35TX88B/89K/CZ63	180 watts

COLOR PICTURE TUBE

35CX30B/35TX88B/35TX89K/CZ63	A89AEJ15X01
32CX11B/CY61	A80LJF30X
32TX78B/32TX79K/CY60	A80LJF30X

CAUTION

The following symbol near the fuse indicates fast operating fuse (to be replaced). Fuse ratings appear within the symbol.
Example:



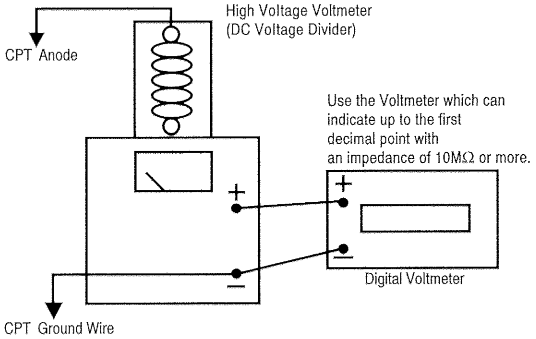
The rating of fuse F901 is 5.0A-125V.
Replace with the same type fuse for continued protection against fire.

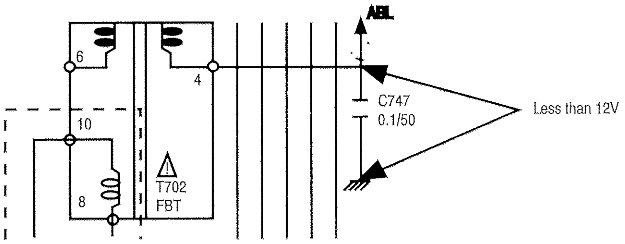
TECHNICAL CAUTIONS

High Voltage Limiter Circuit Operation Check and Overvoltage Protection Circuit Operation Check

Adjustment Preparation

1. Connect a High Voltage Voltmeter between CPT Anode terminal (Anode capside) and Ground. (TP701)
2. Set the AC input voltage to 120 +/- 3V.
3. Receive Circle Pattern or Broadcast Signal and set "BRIGHTNESS" and "CONTRAST" to maximum. Adjust the SCREEN VR and SUB-BRIGHTNESS VR (R340) so that Beam Current is $I_B \pm 0.1$ mA. (The voltage at ABL terminal (C747) should be 12V or less.)


High Voltage Voltmeter
(DC Voltage Divider)
CPT Anode
Use the Voltmeter which can indicate up to the first decimal point with an impedance of 10MΩ or more.
+
−
Digital Voltmeter
CPT Ground Wire


ABL
6
4
10
8
T702
FBT
C747
0.1/50
Less than 12V

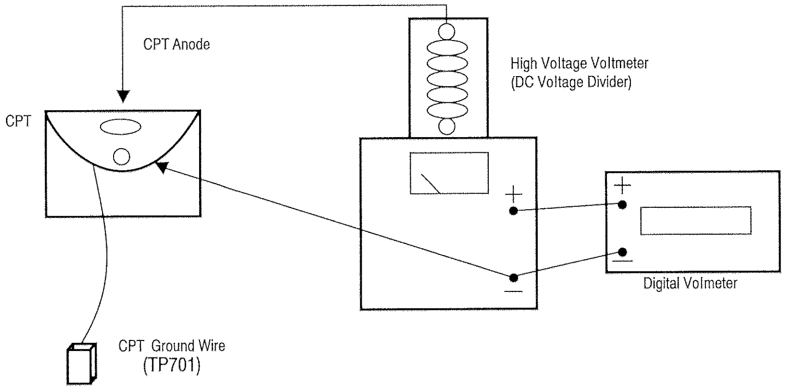
Adjustment Preparation

1. Check that the normal High Voltage is $E_{HT} \pm 1$KV.

CHASSIS	EHT	IB± 0.1mA	E1 (KV)
CZ63	30.2KV	1.8mA	35.5KV
CY60/CY61	29.2KV	1.65mA	34.0KV

Adjustment Preparation

4. Set AC input voltage to 100 ± 5V. Short circuit both ends of R903.


CPT Anode
CPT
High Voltage Voltmeter
(DC Voltage Divider)
+
−
Digital Volmeter
CPT Ground Wire
(TP701)

Adjustment Procedure

Use the voltmeter impedance 10MΩ or more with indication to the first decimal place.

2. Keep CONTRAST, BRIGHTNESS, and SCREEN VR as in item (3). Increase AC input voltage gradually and check that the picture disappears when high voltage is E1. Immediately after checking that it disappears, turn OFF the set switch. Remove adjustment Jig and High Voltage Voltmeter. When connecting or removing High Voltage Voltmeter to or from Anode cap, be sure to turn OFF the switch of the set. Also, be sure to perform it after the chassis discharge of residual high voltage, because the high voltage of CPT Anode may be left.

ADJUSTMENT SPECIFICATIONS

A3LXU3 CHASSIS **PAGE #**

I. **MAIN CHASSIS ADJUSTMENT** 8

1-1. IF ADJUSTMENT 8
- 1-1-1. AGC Coarse Adjustment 8
- 1-1-2. VCO Adjustment (First and Second Method) 8
- 1-1-3. IF Overall Waveform Adjustment 8
- 1-1-4. AFS Discrimination Adjustment 8
- 1-1-5. Sound Discrimination Adjustment 9
- 1-1-6. VCO for OSD Adjustment 9

1-2. COMB FILTER ADJUSTMENT (1 and 2) 9

1-3. DEFLECTION CIRCUIT PICTURE ADJUSTMENT OPERATION CHECK 10
- 1-3-1. Vertical Size Adjustment 10
- 1-3-2. Side Pin Distortion Coarse Adjustment 10
- 1-3-3. Horizontal Size Adjustment, Horizontal Center Adjustment and Horizontal Size Correction Adjustment 10
- 1-3-4. High Voltage Limiter Circuit Operation Check and Overvoltage Protection Circuit Operation Check 10
- 1-3-5. FBT Protection Circuit Operation Check 10
- 1-3-6. +15V Short Protection Circuit Check 10
- 1-3-7. Load Reduction Circuit Operation Check 10
- 1-3-8. MFC Circuit Operation Check (35V only) 11

1-4. MEMORY INITIALIZE 11
- 1-4-1. Timer Sound Operation Check 11

1-5. AFC OPERATION CHECK 11

1-6. CHANNEL SELECTION CIRCUIT OPERATION CHECK 12
- 1-6-1. Channel Up/Down Selection 12
- 1-6-2. Channel Up/Down 12
- 1-6-3. Volume Up/Down 12
- 1-6-4. Power ON/OFF 12
- 1-6-5. AVX 12
- 1-6-6. MENU (Not for 35V) 12
- 1-6-7. MENU Mode (Using Remo-Con Jig) 12
  - 1-6-7-1. Set Up Mode 12
  - 1-6-7-2. Customize Mode 13
  - 1-6-7-3. Clock Mode (Clock Operation Check) 13
  - 1-6-7-4. Video Mode 13
  - 1-6-7-5. Audio Mode 14
  - 1-6-7-6. Reset Mode 14
  - 1-6-7-7. Favorite Channels Mode 14

1-7. REMO-CON OPERATION CHECK 15
- 1-7-1. Direct Channel Selection 15
- 1-7-2. LST. CH (Last Channel Recall) 15
- 1-7-3. Mute 15
- 1-7-4. Recall 15
- 1-7-5. P in P 15
- 1-7-6. Move 15
- 1-7-7. Swap 15
- 1-7-8. Freeze 15
- 1-7-9. Freeze (at P in P OFF) 15

1-8. WEAK ELECTRIC FIELD CHECK 15

1-9. MTS DEMODULATION CIRCUIT ADJUSTMENT 16
- 1-9-1. Stereo VCO Adjustment 16
- 1-9-2. Filter Adjustment 16
- 1-9-3. Input Level Adjustment 16
- 1-9-4. Separation Adjustment 16
- 1-9-5. SAP Receiving Check 16

1-10. YNR OPERATION CHECK (35V ONLY) 17

II. FINAL ADJUSTMENT/COMMON SERVICE ADJUSTMENT 18

2-1. PURITY CONVERGENCE ADJUSTMENT 18
2-1-1. Purity Adjustment (Using Microscope) 18
2-1-2. Purity Adjustment (Hand Operated) 19
2-1-3. Static Convergence Adjustment 21
2-1-4. Dynamic Convergence Adjustment 21

2-2. FOCUS ADJUSTMENT 22

2-3. DEFLECTION CIRCUIT PICTURE ADJUSTMENT 22
2-3-1. Horizontal Center Adjustment 22
2-3-2. Vertical Size Adjustment 22
2-3-3. Side Pin Distortion Adjustment 22
2-3-4. Horizontal Size Adjustment 22

2-4. WHITE BALANCE ADJUSTMENT 23

2-5. SUB-BLACK LEVEL ADJUSTMENT 23

2-6. AGC ADJUSTMENT 23

2-7. CHANNEL SELECTOR OPERATION CHECK 23
2-7-1. C.C.D. Display Position Adjustment 23

2-8. MATCHING CHECK WITH OTHER EQUIPMENTS 23
2-8-1. VIDEO 1 Input Terminal Matching Check 23
2-8-2. VIDEO 2 Input Terminal Matching Check 23
2-8-3. VIDEO 3 Input Terminal Matching Check 23
2-8-4. S-INPUT Terminal Matching Check 24
2-8-5. AUDIO Output Level Check 24

2-9. SAFETY CHECK 24
2-9-1. Polarity Check 24

2-10. MTS OPERATION CHECK 24
2-10-1. STEREO/SAP Broadcast Receiving Check 24
2-10-2. MTS Mode Check 24
2-10-3. STEREO Separation Check 24

2-11. SETTING FOR DELIVERY 24

2-12. MAGNETIC FIELD CORRECTION CIRCUIT OPERATION CHECK (35V ONLY) 24

III. ADJUSTMENT POSITION LIST 25

Refer to CHASSIS SERVICE MANUAL PA NO. 0053 and 0071 for additional technical information.

Note:

1. MAIN CHASSIS ADJUSTMENT is done with precision equipment. Readjustment is only recommended if the service technician replaced a defective component related to the circuit.
2. COMMON SERVICE ADJUSTMENT is recommended for the service technician after final troubleshooting and repair is done. Quick check and fine tuning is advisable to verify that the problem is eliminated.

1. CHASSIS ADJUSTMENT

1-1. IF ADJUSTMENT

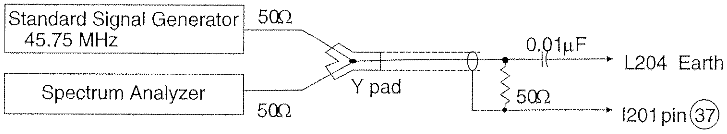
1-1-1. AGC Coarse Adjustment (R202)

Set AGC adjustment VR (R202) to mechanical center.

1-1-2. VCO Adjustment (L204)(First Method)

Adjustment Preparation

(1) Apply 9.0 ± 0.1V to I201 pin ⑭.
(2) Connect I201 pin ② to GND.
(3) Connect the following jig and pick up VCO oscillation leakage voltage.


Standard Signal Generator
45.75 MHz
50Ω
Spectrum Analyzer
50Ω
Y pad
0.01μF
L204 Earth
50Ω
I201 pin ㊲

Adjustment Procedure

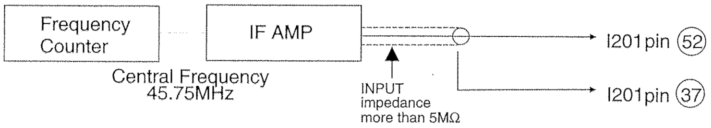
(1) Adjust L204 so that VCO frequency detected by Spectrum Analyzer is 45.75MHz $^{+0}_{-50}$ KHz. (Match the output level of Standard Signal Generator to the level of VCO oscillation leakage voltage and adjust L204 to take 0 beat.)

Note: Perform this adjustment after VCO frequency is stabilized.

1-1-2. VCO Adjustment (L204) (Second Method)

Adjustment Preparation

(1) Apply 9.0 ± 0.1V to I201 pin ⑭.
(2) Connect I201 pin ② to GND.
(3) Connect the following jig and pick up VCO oscillation leakage voltage.


Frequency Counter
IF AMP
Central Frequency
45.75MHz
INPUT
impedance
more than 5MΩ
I201 pin (52)
I201 pin ㊲

Adjustment Procedure

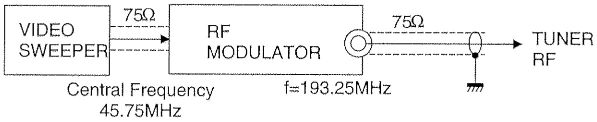
(1) Adjust L204 so that the reading of Frequency Counter is 45.75MHz $^{+0}_{-50}$ KHz.

Note: Perform this adjustment after VCO frequency is stabilized.

1-1-3. IF Overall Waveform Adjustment

Adjustment Preparation

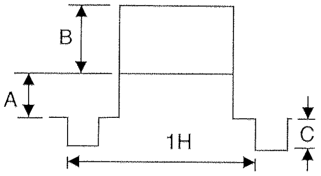
(1) Connect signal as follows:


VIDEO
SWEEPER
75Ω
RF
MODULATOR
75Ω
TUNER
RF
Central Frequency
45.75MHz
f=193.25MHz

Marks
- 0.2 MHz (CH10)
- 1 MHz
- 2 MHz
- 3.6 MHz

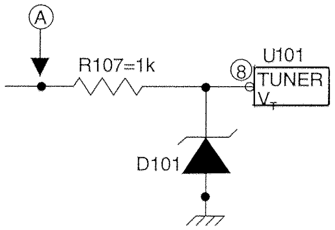
(Output level 91 ± 3 dBμ (50Ω load Modulation 60 - 70%)

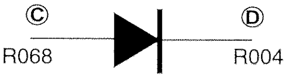
(2) Connect Oscilloscope to Q203 Ⓔ Emitter (TP-12).
Check the signal at TP-12 as follows:



A: Set up level
B: Sweep signal level
C: Sync. level

(3) Add the following voltage:
(1) I201 pin ⑭: +B (9V)
(2) I001 pin ⑫: +B (5V)
(3) TUNER VTi point Ⓐ: 42V
(4) Connect a diode (1S2076, 1SS270TA) to: Ⓒ ~ Ⓓ


Ⓐ
R107=1k
⑧
U101
TUNER
V_T
D101

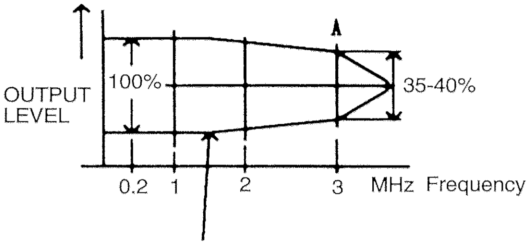


(The other side of I101)

(5) Initialize memory*
(6) Receive Color Bar Signal.

Adjustment Procedure

(1) Adjust TUNER IFT coil so that the output level of 0.2MHz is reference level (100%) and 3.6MHz level is 35% - 40%. (At this time, do not turn TUNER IFT coil more than 1 turn.)



Check that 1MHz~2MHz level is 70%~100%.

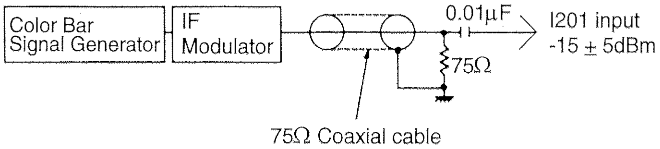
***Note:** Refer to item **1-1-6. Initial Turn ON Procedure.**

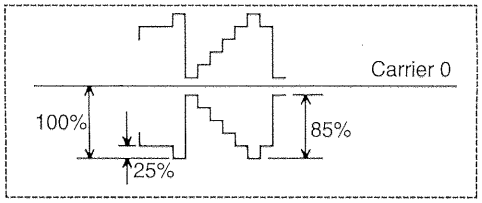
1-1-4. AFS Discrimination Adjustment (L205)

Adjustment Preparation

(1) Input Signal: Between X103 SAW FILTER input and Earth. (R108 both ends)

(2) Apply 9.0 ± 0.1V to I201 pin ⑭.
(3) Connect a DC Voltmeter (internal impedance 1M ohm or more) to AFS output terminal. (I201 pin ㊼)


Color Bar
Signal Generator
IF
Modulator
0.01μF
I201 input
-15 ± 5dBm
75Ω
75Ω Coaxial cable


Carrier 0
100%
85%
25%

Adjustment Procedure

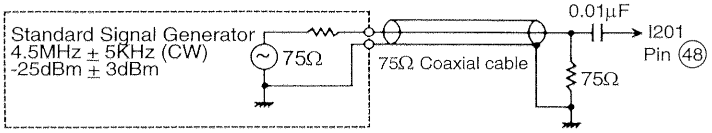
(1) Turn L205 and check that DC Voltmeter connected as above varies from under 0.5 V to over 8.5V.
(2) Adjust L205 so that the DC Voltmeter is 6.5 ± 0.5V at the intermediate point of the core which is changing voltage rapidly in (1) above.

Note: After this adjustment is finished, perform item No. **1-1-2. VCO Adjustment Check.** If it is deviated, adjust to regular adjusting point and check again the subsequent adjustments.

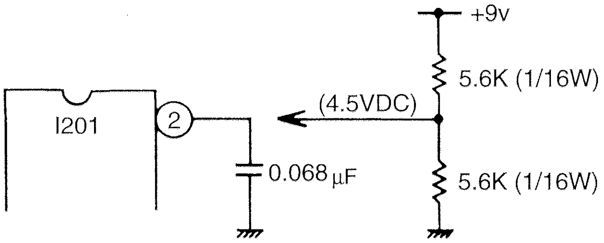
1-1-5. Sound Discrimination Adjustment (L202)

Adjustment Preparation

(1) Input Signal: Apply the following signal to I201 pin ㊽.


Standard Signal Generator
4.5MHz ± 5KHz (CW)
-25dBm ± 3dBm
75Ω
75Ω Coaxial cable
0.01μF
I201
Pin ㊽
75Ω

(2) Apply DC Voltage 9.0 ± 0.1V to I201 pin ⑭.
(3) Connect a Voltmeter between Q201 Emitter and Earth.
(4) Apply the following Voltage to I201 pin ②.


+9v
5.6K (1/16W)
(4.5VDC)
I201
2
0.068μF
5.6K (1/16W)

(5) Short-Circuit R201 both end (Tuner AGC Terminal to GND).

Adjustment Procedure

(1) Adjust L202 so that the reading of DC Voltmeter is 3.5 ± 0.3V.
(2) After adjusting, release the jig above (4) and (5).

1-1-6. VCO For OSD Adjustment.

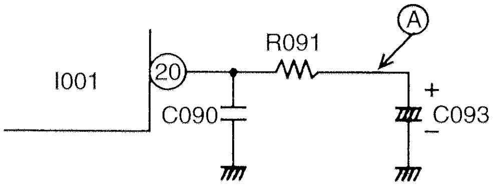
This chassis starts in initial turn ON and AUTO demonstration mode before memory initialize. So memory initialize should be done according to next procedure before adjustment start.

Initial Turn ON Procedure

(1) Supply AC power. TV Set is turned ON.
(2) Turn OFF the set using power switch (S001). Remo-Con not used.
(3) Turn ON the set again.
(4) Memory initialize (see item **1-4. Memory Initialize**) should be done.

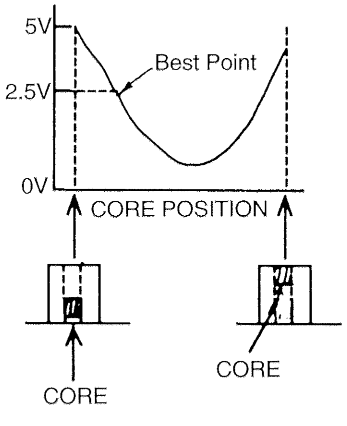
Adjustment Preparation

(1) Receive Color Bar or Circle Pattern Signal.
(2) Connect a DC Voltmeter to point Ⓐ.


A
R091
I001
20
+
C090
C093
−

Adjustment Procedure

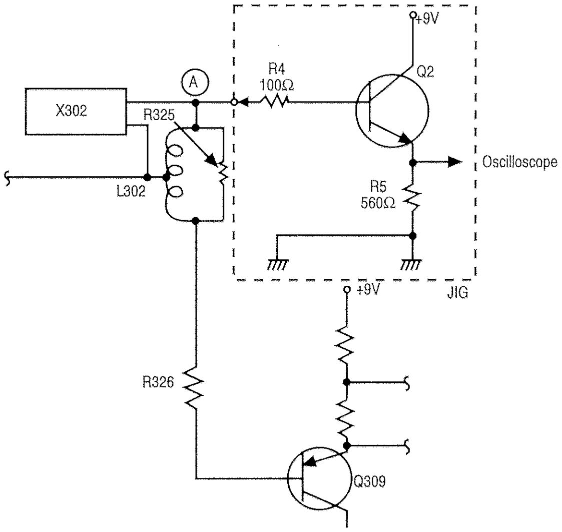
(1) Adjust L010 so that the Voltmeter is 2.5 ± 0.2V.


5V
Best Point
2.5V
0V
CORE POSITION
CORE
CORE

1-2. COMB FILTER ADJUSTMENT (1)

Adjustment Preparation

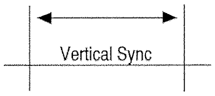
(1) Adjust the VR(R323, R32E, R333) to center position.
(2) Receive Color Bar Signal or Green Single Color Using below methods (I) and (II).
    (I) From Video Input
    (II) Ant. Input: the range of signal strength must be 65dBm to 80dBm(75 dBm is standard).
(3) Connect the jig (shown below) to point Ⓐ.


+9V
R4
100Ω
Q2
A
X302
R325
Oscilloscope
L302
R5
560Ω
+9V
JIG
R326
Q309

Adjustment Procedure

(1) Turn R323 so that the sub-carrier component becomes minimum.
(2) Then turn L302 so that the sub-carrier component becomes minimum.

Note: Sub-carrier component waveform shows below point.


Vertical Sync

(3) When Residual Chroma Level does not become less than 20mVp-p repeat items (1) and (2).

Remarks:

(1) Use the probe of 10:1.
(2) Adjust the range of Oscilloscope to 20mV/div.
(3) Residual Chroma Level should be less than 20mVp-p.
(4) Connect the jig and P.W.B by lead wire of minimum length, to prevent a defective oscillation.
(5) Adjustment should be done after a certain time (more than 10 sec) after power ON.

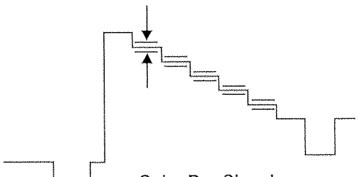
1-2. COMB FILTER ADJUSTMENT(2)

Adjustment Preparation

(1) Connect an Oscilloscope between Q30C Emitter and Earth.

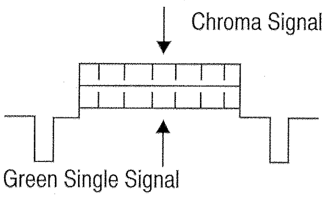
Adjustment Procedure

(1) Turn R32E so that the sub-carrier component becomes minimum.
(2) Then turn R333 so that sub-carrier component becomes minimum.
(3) When item (2) is finished, turn R32E again so that the sub-carrier component becomes minimum.
(4) When Residual Chroma Level does not become less than 15mVp-p, repeat items (1) and (2).



Color Bar Signal

Remarks:
(1) Adjust the range of Oscilloscope to 50mV/div.
(2) Residual Chroma Signal Level should be less than15mVp-p.
Note: Chroma Signal Level shows below point.



1-3. DEFLECTION CIRCUIT PICTURE ADJUSTMENT OPERATION CHECK

1-3-1. Vertical Size Adjustment (R62A)

Adjustment Preparation
(1) Receive Circle Pattern Signal.
(2) Set "CONTRAST" to maximum and "BRIGHTNESS" to the center.

Adjustment Procedure
(1) Adjust Vertical Size Adjustment VR (R62A) so that the inner circle of Circle Pattern comes in contact with the top and bottom of the screen.

1-3-2. Side Pin Distortion Coarse Adjustment (R752)

Adjustment Preparation
(1) Receive Circle Pattern Signal.
(2) Set "CONTRAST" to maximum and "BRIGHTNESS" to the center.

Adjustment Procedure
(1) Vary R752 so that the right and left vertical lines are straight.

1-3-3. Horizontal Size Adjustment (R755), Horizontal Center Adjustment (R704) and Horizontal Size Correction Adjustment (R775)

Adjustment Preparation
(1) Receive Circle Pattern Signal.
(2) Set "CONTRAST" to maximum and "BRIGHTNESS" to the center.

Adjustment Procedure
(1) Set the R775 at the counterclockwise end.
(2) Vary R755 so that the horizontal size markers at the right and left end are 1.0 - 1.0 on the average.
(3) Vary R775 so that the horizontal size markers at right and left are 1.5 -1.5 on the average.
(4) Vary R704 so that the difference of the horizontal size markers at the right and left end are within 1.5.

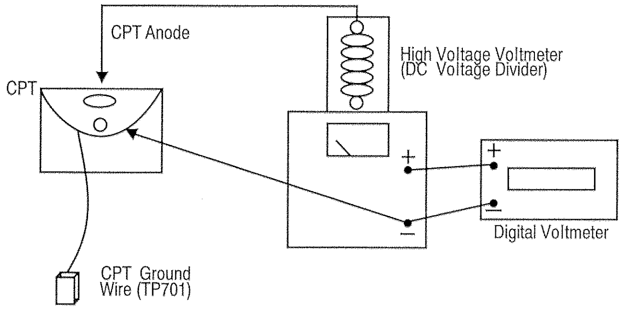
1-3-4. High Voltage Limiter Circuit Operation Check and Overvoltage Protection Circuit Operation Check

Adjustment Preparation
(1) Connect a High Voltage Voltmeter between CPT Anode terminal (Anode cap side) and the Ground (TP701).
(2) Set AC input voltage to 120 ± 3V.
(3) Receive Circle Pattern and set "BRIGHTNESS" and "CONTRAST to maximum. Adjust SCREEN VR and SUB-BRIGHTNESS VR(R340) so that Beam Current is I_B ± 0.1mA.
(The voltage of ABL terminal - C747 both ends should be 12V or less)

Adjustment Procedure
(1) Check that the normal High Voltage is E_{HT} ± 1KV.

CHASSIS	EHT	IB ±0.1 mA	E1 (KV)
CZ63	30.2KV	1.8mA	35.5KV
CY60/CY61	29.2KV	1.65mA	34.0KV

Adjustment Preparation
4) Set AC input voltage to 100 ± 5V. Then short-circuit both ends of R903.



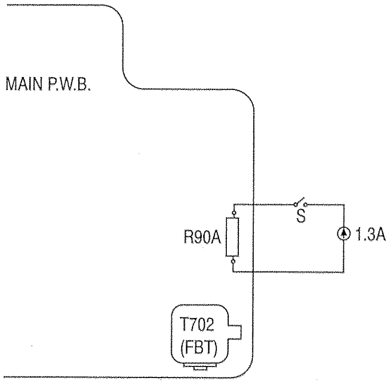
Use a Voltmeter with input impedance 10M ohm or more with indication to the 1st decimal place.

Adjustment Procedure
(2) Keep CONTRAST, BRIGHTNESS, and SCREEN VR as in item (3). Increase AC input voltage gradually, and check that the picture disappears when high voltage is E1. Immediatly after checking that it disappears, turn OFF the set. Remove adjustment jig and High Voltage Voltmeter.

When connecting or removing High Voltage Voltmeter to or from Anode cap, be sure to turn OFF the switch of the set. Also, be sure to perform it after the chassis discharge residual High Voltage, because the high voltage of CPT Anode may be left.

1-3-5. FBT Protection Circuit Operation Check

Adjustment Procedure
(1) Set "CONTRAST" to maximum, "BRIGHTNESS" to center.
(2) After turning ON the switch of the set, turn ON the switch (S) of the jig as shown below.
(Operating current limiter circuit.).
Check that the picture disappears.
(3) Immediately after checking, turn OFF the switch of the set.



1-3-6. +15V Short Protection Circuit Check.

Adjustment Preparation
(1) Adjust "CONTRAST" to maximum, "BRIGHTNESS" to center.

Adjustment Procedure
(1) Connect 10KΩ resistor between Q703 Base and GND and check that the picture disappears.
(2) Disconnect resistor immediately.

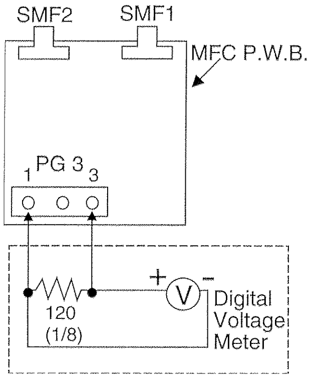
1-3-7 Load Reduction Circuit Operation Check.

Adjustment Procedure
(1) Receive Circle Pattern Signal.
(2) Set "VIDEO" Mode "CONTRAST" to maximum, "BRIGHTNESS" to center.
(3) Connect a DC Voltmeter to both sides of R912.
(4) Check to make sure the potential difference is more than 10V.
(5) Receive Crosshatch Signal.
(6) Set "VIDEO" mode "CONTRAST" to minimum, "BRIGHTNESS" to center.
(7) Check the potential difference is less than 3V.

1-3-8. MFC Circuit Operation Check (35V Only)

Adjustment Preparation

(1) Receive Circle Pattern.
(2) Connect the Jig (shown below) to the PG3 Pin in MFC. P.W.B.



Adjustment Procedure

(1) Then turn SMF1 to "STRONG", turn SMF2 to "NORTH", check that the voltage is V= +2.9 ± 0.5V.
(2) Then turn SMF1 to "WEAK", check that the voltage is V = +1.5 + 0.5V.
(3) Then turn SMF2 to "SOUTH", check that the voltage is V = -2.9 + 0.5V.
(4) Then turn SMF1 to "WEAK", check that the voltage is V = -1.5 ± 0.5V.
(5) Then turn SMF2 to "E/W", check that the voltage is V = 0V.

1-4. MEMORY INITIALIZE

1-4-1. Timer Sound Operation Check

Adjustment Procedure

(1) Press the memory initialize key with the Remo-Con jig.
(2) After 5 sec. operation, check that the set has selected CH 03 and a "beeping" sound comes out from the left side (L-CH).

Note: Do not draw out the outlet within 5 second.
Do not perform any key operation, either.
After this operation, each setting should become to delivery setting automatically.

1-5. AFC OPERATION CHECK

Adjustment Preparation

(1) Connect the jig shown below to the ANT Terminal.

Adjustment Procedure

(1) Receive a Standard Carrier Signal (not offset) with the channel up/down or direct selection buttons.
Check that it is pulled into the standard tuning point.
(2) Receive an Offset Signal of ± 1.5MHZ. Check that it is pulled into the standard tuning point.
(Perform the Channel Selection Operation again.)
(3) Receive an Offset Signal of - 1.5MHZ. Check that it is pulled into the standard tuning point.
(Perform the Channel Selection Operation again.)

Note 1: Modulation signal should be used at the Circle Pattern and the Color Bar Signal.

Checking jig (All channel converter can be used)

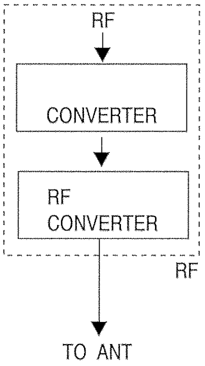


TABLE 1-6

Note: CATV Channels, actual Input Channel Numbers and Indicated Channel Numbers.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	37	31	32	33	34	35	36
MID BAND									SUPER BAND													

W+1	W+2	W+3	W+4	W+5	W+6	W+7	W+8	W+9	W+10	W+11	W+12	W+13	W+14	W+15	W+16	W+17	W+18	W+19	W+20	W+21	W+22	W+23
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
HYPER BAND																						

W+24	W+25	W+26	W+27	W+28	W+29	W+30	W+31	W+32	W+33	W+34	W+35	W+36	W+37	W+38	W+39	W+40	W+41	W+42	W+43	W+44	W+45	W+46
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
HYPER BAND					ULTRA BAND																	

W+47	W+48	W+49	W+50	W+51	W+52	W+53	W+54	W+55	W+56	W+57	W+58	A-5	A-4	A-3	A-2	A-1	W+59	W+60	W+61	W+62	W+63	W+64
83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
ULTRA BAND												MID BAND					ULTRA BAND					

W+65	W+66	W+67	W+68	W+69	W+70	W+71	W+72	W+73	W+74	W+75	W+76	W+77	W+78	W+79	W+80	W+81	W+82	W+83	W+84
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
ULTRA BAND																			

1-6. CHANNEL SELECTION CIRCUIT OPERATION CHECK

1-6-1. CHANNEL UP/DOWN Selection

Adjustment Preparation

1) Set the TV set so that VHF (CH 11, CH 13), UHF(CH 14, CH 46, CH 63) and CATV(CH A, CH E, CH P, CH W) can be received.

(2) Set SIGNAL SOURCE Mode to AIR.
(Press the MENU key, and select the SETUP and SIGNAL SOURCE Mode).

Adjustment Procedure

(1) Check that VHF are received correctly by pressing CH UP (▲) or DOWN (▼) control button.

Adjustment Preparation

(3) Set SIGNAL SOURCE Mode to CATV 1.

Adjustment Procedure

(2) Perform the same operation as in item (1), and check that VHF and CATV are received correctly.

Adjustment Preparation

(4) Set SIGNAL SOURCE Mode to CATV2.

Adjustment Procedure

(3) Perform the same operation as in item (1), and check that VHF and CATV are received correctly.

1-6-2. CHANNEL UP/DOWN

(Inclusive of AUTO CHANNEL SET Operation)

Adjustment Preparation

(1) Set the TV set so that VHF (CH 11, CH 13), UHF (CH 14, CH 46, CH 63) and CATV (CH A, CH E, CH P, CH W, CH A-2, CH GG, CH OO, CH WW) can be received.

Adjustment Procedure

(1) Set SIGNAL SOURCE Mode to AIR.

(2) Select AUTO CHANNEL SET Mode and press (▶) key.
After AUTO CHANNEL SET operation is completed, by pressing the Channel UP (▲) or DOWN (▼) control button, check that the channels having Broadcast Signal(s) can be received.

(3) Set SIGNAL SOURCE Mode to CATV 1.

(4) Perform the same operation as in item (2) check that CATV can be received correctly.

Adjustment Preparation

(2) Set to CHANNEL LIST Mode.

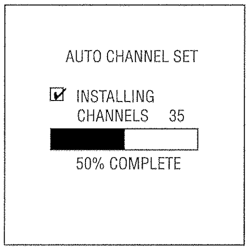
Adjustment Procedure

(5) Check that the SCAN of channels which can be selected is ON.

Note 1: CATV Channels, actual Input Channel Numbers and Indicated Channel Numbers.

A	14
E	18
P	29
W	36
A-2	98
GG(W+7)	43
OO(W+15)	51
WW(W+23)	59

Note 2: Display while AUTO CHANNEL SET is operating.



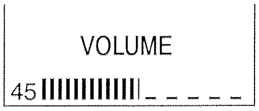
AUTO CHANNEL SET
☑ INSTALLING
CHANNELS 35
50% COMPLETE

(See Table 1-6 on Bottom of Page 11)

1-6-3. VOLUME UP/DOWN

Adjustment Procedure

(1) Check that the Sound Volume Level and Volume Indication is going up or down continuously by pressing Sound Volume UP (▲) or DOWN (▼) control button.



VOLUME
45

1-6-4. POWER ON/OFF

Adjustment Procedure

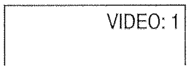
(1) Check that the Power alternates between ON and OFF by alternately pressing the POWER button.

1-6-5. AVX

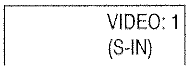
Adjustment Procedure

(1) Check that with every press of the AVX Button, the O.S.D. works as shown below.

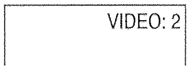
Receiving CH → VIDEO: 1
→ VIDEO: 1 (S-IN) → VIDEO: 2 → VIDEO: 3
→ Receiving CH



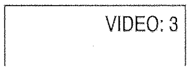
VIDEO: 1



VIDEO: 1
(S-IN)



VIDEO: 2



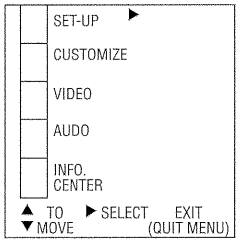
VIDEO: 3

1-6-6. MENU (NOT FOR 35V CTV)

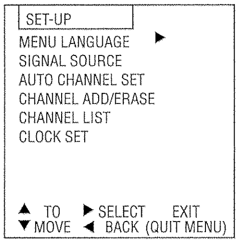
Adjustment Procedure

(1) Check that the MENU O.S.D. displays by pressing MENU button on the Front Panel Control.

Note: MENU O.S.D. is displayed below:



SET-UP ▶
CUSTOMIZE
VIDEO
AUDO
INFO.
CENTER
▲ TO ▼ MOVE ▶ SELECT EXIT (QUIT MENU)



SET-UP
MENU LANGUAGE ▶
SIGNAL SOURCE
AUTO CHANNEL SET
CHANNEL ADD/ERASE
CHANNEL LIST
CLOCK SET
▲ TO ▼ MOVE ▶ SELECT ◀ BACK EXIT (QUIT MENU)

(2) After MENU O.S.D. is displayed.
Check that the keys function change.

MENU → MENU
CH UP → ▲ Key
CH DOWN → ▼ Key
VOLUME UP → ▶ Key
VOLUME DOWN → ◀ Key
INPUT → INPUT

1-6-7. MENU Mode (Using Remo-Con Jig)

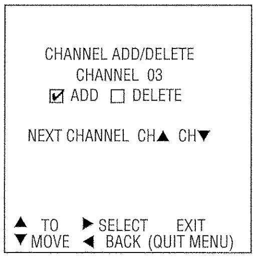
1-6-7-1. SET UP Mode.

Adjustment Preparation

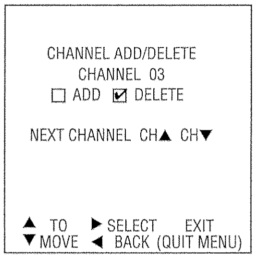
(1) Set to CHANNEL MEMORY Mode.

Adjustment Procedure

(1) Check that the ADD,DELETE is selected by pressing the (▶) or (◀) control button.



CHANNEL ADD/DELETE
CHANNEL 03
☑ ADD ☐ DELETE
NEXT CHANNEL CH▲ CH▼
▲ TO ▼ MOVE ▶ SELECT ◀ BACK EXIT (QUIT MENU)



CHANNEL ADD/DELETE
CHANNEL 03
☐ ADD ☑ DELETE
NEXT CHANNEL CH▲ CH▼
▲ TO ▼ MOVE ▶ SELECT ◀ BACK EXIT (QUIT MENU)

Adjustment Preparation

(2) (a) Set the Mode to CLOSED CAPTION.
 (b) Receive a Broadcast Signal having a CLOSED CAPTION signal.

Adjustment Procedure

(1) Set DISPLAY setting to ON by pressing (▶) or (◀) control button. At this time, set the other settings as follows:

1. DISPLAY: ON
2. MODE: C.C.
3. CHANNEL: 1

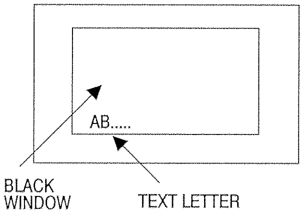
(2) Check that the CAPTION corresponding to the above setting is displayed on the screen.
(3) Set CHANNEL to 2.
(4) Check that the CAPTION of CHANNEL 2 is displayed on the screen.
(5) Set CHANNEL to 1.
(6) Check that the CAPTION of CHANNEL 1 (FIELD 2) is displayed on the screen.
(7) Set the mode to TEXT.

Adjustment Procedure

(8) Check that a black window appears and TEXT letters are displayed at the center of the screen.
(9) Repeat adjustment procedure from (3) to (6) and check that TEXT letters are displayed corresponding to each Mode.
(10) Set the Mode to CAPTION.
(11) The black window should disappear returning to the state of (2).
(12) Set ON/OFF to OFF.
(13) Check to be sure that the CAPTION letters disappear.

Remarks:

Note: Reading error should not occur on every mode.
The contents of error:
1. Wrong letters are displayed.
2. Letter omitting.
3. Other abnormal display.



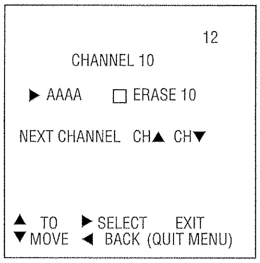
1-6-7-2. CUSTOMIZE Mode.

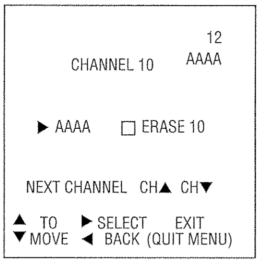
Adjustment Preparation

(2) Set to CHANNEL ID Mode.

Adjustment Procedure

(1) Select the "A" by pressing the (▲) or (▼) control button, and select the input position by pressing the (▶) or (◀) control button.
(2) After pressing the ENTER button, check that the indication of "AAAA" is the same as CH No. indication.
(3) Select the CHANNEL ID Mode again, select the "ERASE ID" by pressing the (▶) control button.
(4) Check that the "AAAA" is deleted when the CH No. is indicated, after pressing the "MENU" button.





Adjustment Preparation

(3) Set to CHILD LOCK Mode.

Adjustment Procedure

(1) Select CHILD LOCK from CUSTOMIZE menu.
(2) Press "0" button 3 times. ("000" is input).
(3) Select CHANNEL ON by pressing (▶) from CHILD LOCK OPTIONS menu.
(4) Check that the picture becomes pitch-dark, and sound does not come out.
(5) Press (▶) to change to CHANNEL OFF.
(6) Check that the picture and sound return to the previous condition.

Adjustment Preparation

(4) Set VOLUME CORRECTION Mode from AUDIO menu.

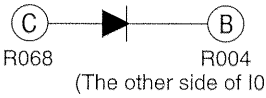
Adjustment Procedure

(1) Select the registration point using the (▲) or (▼) control button and the received Channel No. is memorized by pressing the MENU button.
(2) Check that Volume Level changes and sets 100%~50% (5% step) using (▶) or (◀) control button.

1-6-7-3. CLOCK Mode (Clock Operation Check)

Adjustment Preparation

(1) Connect a Diode (IS2076, ISS27OTA equivalent) between Ⓒ and Ⓑ.

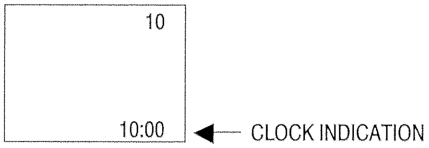


Remarks: The addition of the above diode intends to check the operation with clock counting operation as 60 time mode.

(2) Set to CLOCK SET Mode.

Adjustment Procedure

(1) After clock setting is done and the indication disappears, perform CH indication. Check that clock indication is displayed in addition to the CH indication, and that the clock indication is going by 1 second per minute.



1-6-7-4. VIDEO Mode

Adjustment Preparation

(1) Receive the Color Bar Signal.
(2) Set to CONTRAST Mode.

Adjustment Procedure

(2) Check that CONTRAST is changed by pressing (◀) or (▶) control buttons.

▶ ; BRIGHTER
◀ ; DARKER

Adjustment Preparation

(3) Set to TINT Mode.

Adjustment Procedure

(3) Check that TINT is changed by pressing (◀) or (▶) control buttons.

▶ ; MORE GREEN
◀ ; MORE RED

Adjustment Preparation
(4) Set to COLOR Mode.

Adjustment Procedure
(4) Check that COLOR is changed by pressing (◀) or (▶) control buttons.

▶ ; DEEPER
◀ ; LIGHTER

Adjustment Preparation
(5) Set to BRIGHTNESS Mode.

Adjustment Procedure
(5) Check that BRIGHTNESS is changed by pressing (◀) or (▶) control buttons.

▶ ; BRIGHTER
◀ ; DARKER

Adjustment Preparation
(6) Set to SHARPNESS Mode.

Adjustment Procedure
(6) Check that SHARPNESS is changed by pressing (◀) or (▶) control buttons.

▶ ; CLEARER
◀ ; SOFTER

Adjustment Preparation
(7) Set to TEMPERATURE CONTROL Mode.

Adjustment Procedure
(7) Check that TEMPERATURE CONTROL is changed by pressing (◀) or (▶) control button.

▶ ; OFF (WARM)
◀ ; ON (COOL)

Adjustment Preparation
(8) Set to RESET Mode.

Adjustment Procedure
(8) Check that all picture setting modes return to delivery settings by pressing the ▶ button.

1-6-7-5. AUDIO Mode

Adjustment Preparation
(1) Set to BALANCE Mode.

Adjustment Procedure
(1) Check that BALANCE is changed by pressing control (◀) or (▶) control buttons.

▶ ; RIGHT
◀ ; LEFT

Adjustment Preparation
(2) Set to BASS Mode.

Adjustment Procedure
(2) Check that BASS is changed by pressing control (◀) or (▶) control buttons.

▶ ; STRONG
◀ ; WEAK

Adjustment Preparation
(3) Set to TREBLE Mode.

Adjustment Procedure
(3) Check that TREBLE is changed by pressing control (◀) or (▶) control buttons.

▶ ; STRONG
◀ ; WEAK

Adjustment Procedure
(4) Set to RESET Mode.

Adjustment Procedure
(4) Check that all sound setting modes return to delivery settings by pressing (▶) button.

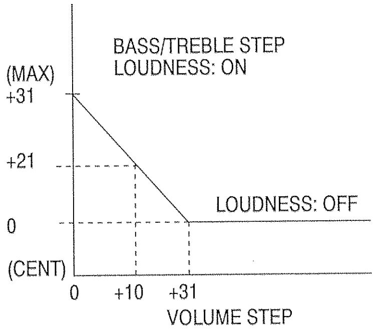
Adjustment Preparation
(5) (a) Set to "VOLUME" step at *10. Set to "BASS" and "TREBLE" at center when "LOUDNESS" is turned OFF. Set to "LOUDNESS" Mode.
(b) Set "LOUDNESS" to OFF, and "BASS/ TREBLE" to center.
(c) Set it to LOUDNESS Mode.

Adjustment Procedure
(5) Check that "BASS" and "TREBLE" are changed as below table when set to "LOUDNESS" is turned ON by pressing (◀) or (▶) control button "LOUDNESS" turn OFF after checked.

LOUDNESS	BASS	TREBLE
OFF	CENTER	
ON	+21 STEP	

(When VOLUME st 10)

***Note:** According to Volume Setting Level, this function works as shown in below figure.



Adjustment Preparation
(6) (a) Input Stereo Sound Signal to VIDEO:1 terminals, and set " VIDEO:1" by INPUT button.
(b) Set to SURROUND Mode.

Adjustment Procedure
(6) Check that sound is change more loudly when set to MUSIC or MOVIE Mode by pressing (◀), (▶), (▲) or (▼) control button.

Adjustment Preparation
(7) (a) Input Monaural Sound Signal to VIDEO:1 " L " terminal and set "VIDEO:1" by INPUT button.
(b) Set to SURROUND Mode.

Adjustment Procedure
(7) Check that sound is change more loudly when set to SIMULATE mode by (◀), (▶), (▲) or (▼) control button.

1-6-7-6. RESET Mode.

Adjustment Preparation
(1) Set VIDEO Setting to minimum "CONTRAST" and AUDIO setting to "BALANCE" to left.
(See item **1-6-7-4** and **1-6-7-5**.)
(2) Set to RESET Mode.

Adjustment Procedure
(1) Check that VIDEO and AUDIO performance return to delivery setting by pressing the ▶ button.
(CONTRAST to maximum, BALANCE to center)

1-6-7-7. FAVORITE CHANNELS Mode.

Adjustment Preparation
(1) Set to FAVORITE CHANNELS Mode by pressing one of (◀), (▶), (▲) or (▼) control buttons.

Adjustment Procedure

(1) Select registration position using (◀), (▶), (▲) or (▼) control buttons, and check that the Channel No. selected is registered by pressing the MENU button.
Note: 16 stations could be registered.

(2) After Normal Mode is set using the MENU button, check that the Registered Channel can be selected by using (◀), (▶), (▲) or (▼) control buttons.
Note: The selected channel is received after 0.5 seconds.

1-7. REMO-CON OPERATION CHECK

The Remo-Con check jig should be used for Remo-Con operating range and Remo-Con operation check.

1-7-1. Direct Channel Selection

Adjustment Procedure

(1) Input 2 or 3 digits of Channel Number with the buttons of the Remo-Con check jig "0 - 9" and "100". Check that the input number and the On-Screen Display number are the same.

1-7-2. LST-CH (Last Channel Recall)

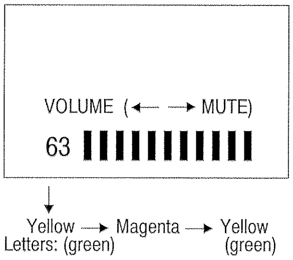
Adjustment Procedure

(1) Check that the set receives alternately between the channel which is being received and the channel which was received just before now by alternately pressing the "LST-CH" button of the Remo-Con check jig.

1-7-3. MUTE

Adjustment Procedure

(1) Check that the sound alternates between Mute and Mute Free by alternately pressing the "MUTE" button of the Remo-Con check jig. At this time, check that the indication color alternates between yellow (letters:green) and magenta.



1-7-4. RECALL

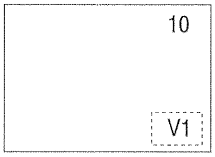
Adjustment Procedure

(1) Check that On-Screen Display Channel No. indication alternates between ON and OFF by alternately pressing the "RECALL" button of the Remo-Con check jig.

1-7-5 . P in P

Adjustment Preparation

(1) Connect the signal to ANT and receive it.
(2) Connect the signal to VIDEO: 1.



Note: At this CASE, sub-picture should be V1.

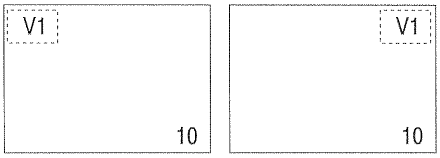
Adjustment Procedure

(1) Check that, by alternately pressing the "P in P" button of Remo-Con check jig, sub-picture alternates between ON and OFF. When sub-picture is ON, check that the Channel No. and "V1" are displayed.

1-7-6. MOVE

Adjustment Preparation

(1) Press "P in P" button to set to P in P Mode.



Adjustment Procedure

(1) Check that, by alternately pressing the MOVE button of Remo-Con check jig, sub-picture moves counterclockwise. At this time, check that "V1" of sub-picture also moves as well.
Note: When sub-picture is in the upper part of the screen, the Channel No. of main picture moves to the lower right.

1-7-7. SWAP

Adjustment Preparation

(1) Press "P in P" button to set to P in P Mode.

Adjustment Procedure

(1) Check that, by alternately pressing the "SWAP" button, the contents of main picture and sub-picture are exchanged.

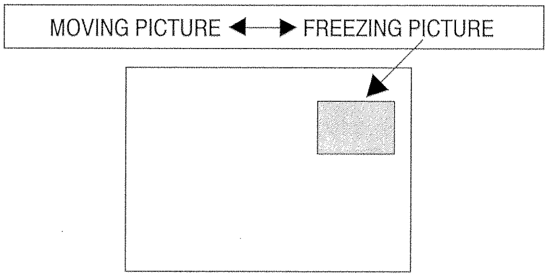
1-7-8. FREEZE

Adjustment Preparation

(1) Connect the signal to ANT and VIDEO: 1.
(One or both of the pictures should be moving picture.)
(2) Press "P in P" button to set to P in P Mode.
(3) Sub-picture should be moving picture by "SWAP" button.

Adjustment Procedure

(1) Check that, by alternately pressing "FREEZE" button, sub-picture alternates between moving picture and freezing picture.



(2) Press "P in P" button to make sub-picture disappear.

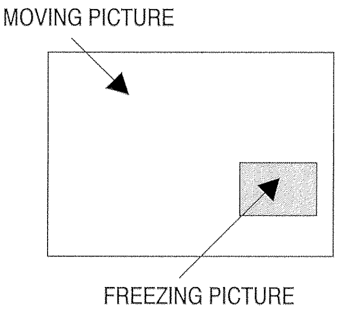
1-7-9. FREEZE (P in P OFF)

Adjustment Preparation

(1) Connect signals to ANT and VIDEO: 1. Both signals should be moving picture.
(2) Set P in P to OFF.

Adjustment Procedure

(1) Check that freezing picture of main screen appears by pressing the FREEZE button of the Remo-Con check jig.
(2) Check it also in the TV and VIDEO: 1 modes.
(3) Check that sub-picture disappears by pressing the FREEZE button at picture freezing.
(4) Check that it turns to normal P in P sub-picture by pressing the P in P button at picture freezing.



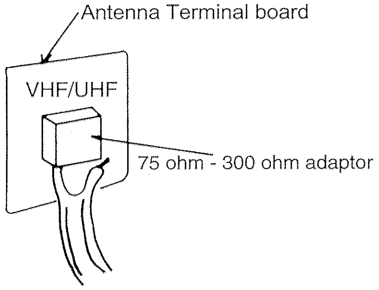
1-8. Weak Electric Field Check

Adjustment Preparation

(1) Connect one side of the 300 ohm feeder to 75 ohm - 300 ohm antenna adaptor. Connect the antenna adaptor to the VHF antenna terminal board as shown.
(2) Turn to No Signal Condition.

Adjustment Procedure

(1) Check that oscillation and abnormal beat etc. does not occur in any of the channel.

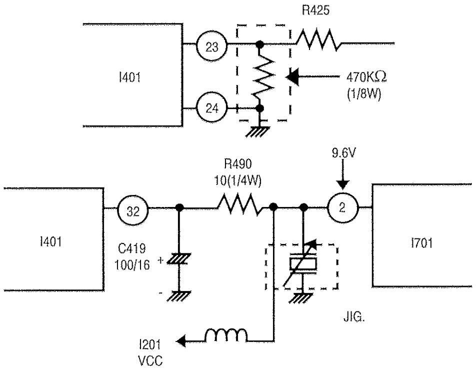

Antenna Terminal board
VHF/UHF
75 ohm - 300 ohm adaptor

1-9. MTS Demodulating Circuit Adjustment

1-9-1. Stereo VCO Adjustment (R423)

Adjustment Preparation

(1) Same as items 1-9-2 (1) and (2).
(2) Connect I401 pin ㉓ to pin ㉔ through 470KΩ resistance as shown in the figure.
(3) Connect a Frequency Counter to I401 pin ㊶. Use the probe of 1 : 1.
(Probe standard Ri ≧ 1 M ohm, Ci ≦ 15pF)
(4) Input of I401 pin ㊴ is no signal.
(5) Apply +9.6V ± 0.1V to the pin ② of I701 as shown in the figure. (I401 +B)


R425
I401
23
24
470KΩ
(1/8W)
9.6V
R490
10(1/4W)
32
2
I401
C419
100/16
I701
JIG.
I201
VCC

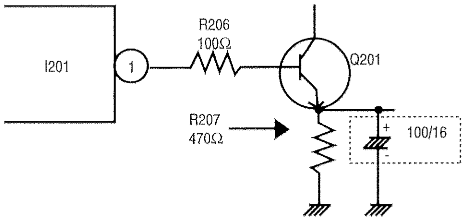
Adjustment Procedure

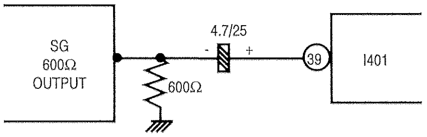
(1) Turn VR(R423) to set to 15.73 ± 0.01KHz.
(2) After the adjustment, remove the 470KΩ
(Between pins ㉓ - ㉔ of I401)

1-9-2. Filter Adjustment VR(R418)

Adjustment Preparation

(1) Set VR(R4IK) fully counterclockwise.
(2) Set Q201 Emitter to GND through capacitor 100uF/16V as shown in the figure.
(3) Apply the signal to I401 pin ㊴ with the jig shown as follows.


I201
1
R206
100Ω
Q201
R207
470Ω
100/16

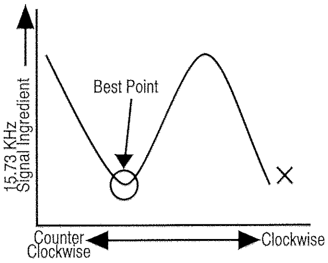

SG
600Ω
OUTPUT
4.7/25
600Ω
39
I401

ⓐ SG Output Signal Specification
(1) FREQUENCY
f = 15.73 KHz (Sine Wave)
(2) Signal Level
V = 100mVrms

(4) Connect an Oscilloscope to I401 pin ㉟ (L-R out).

Adjustment Procedure

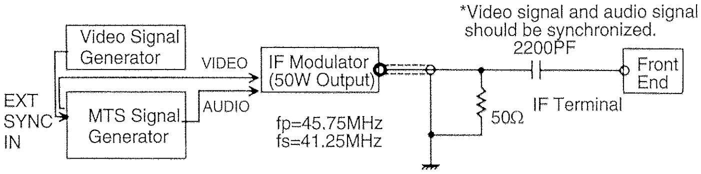
(1) Input signal ⓐ and adjust VR(R418) so that the waveform of pin ㉟ (15.73KHz included) is minimum.



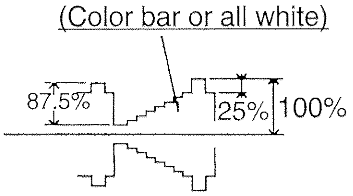
1-9-3. Input Level Adjustment VR(R41K)

Adjustment Preparation

(1) Apply the signal to TUNER (U101) IF output terminals of MAIN PWB using the jig shown below.


*Video signal and audio signal should be synchronized.
Video Signal Generator
VIDEO
IF Modulator (50W Output)
2200PF
Front End
EXT SYNC IN
MTS Signal Generator
AUDIO
fp=45.75MHz
fs=41.25MHz
50Ω
IF Terminal

IF Modulator output signal waveforms
(Color Bar or All White)


(Color bar or all white)
87.5%
25%
100%

IF Modulator Output Level and P/S
P = 106dBu (50 ohm termination)
S level; -3dB to P level
At this time, S/N ratio of F/E Video Output is 45db or less.

Sound Modulation Condition

- Noise Reduction Encoder: ON
- Stereo Signal: ①R = 0(L only), 300Hz, 30% modulation (Note 2)*
  ②R = 0(L only), 3KHz,30% modulation (Note 2)*
- Monaural Signal: ③Monaural, 400Hz 100%; modulation (PRE-EN OFF)
- SAP Signal: ④SAP, 300Hz 30% modulation (Note 2)*

(2) Connect AC Voltmeter Vo to I401 pin ㊴.
(3) Same as Item 1-9-1 (5) (Apply +B to I401)
* Refer to next page.

Adjustment Procedure

(1) Select Sound Input Signal ③ and adjust VR(R41K) to Vo = 150m Vrms ± 5m Vrms.

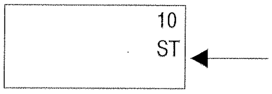
1-9-4. Separation Adjustment VR(R429, R42A)

(The adjustment of items **1-9-1.** thru **1-9-3.** should have been finished.)

Adjustment Preparation

(1) Use the same jig as Input Level Adjustment.
(Be sure to remove the AC Voltmeter connected to I401).
(2) Connect an Oscilloscope to I401 pin ④.
(3) Same as in items 1-9-3 (3) and (4).
(4) Set "MTS MODE" to "STEREO".

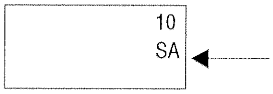
Remarks:
Pay attention that the separation adjusting point may be deviated if the Input Level is not regularly adjusted.



Check that "ST" is indicated in red under CH indication by pressing RECALL key of Remo-Con check jig.

Note 1: Use the Sound Modulator the frequency characteristic of which should be within + 1% during 50Hz - 100KHz.

Note 2: Turn OFF the Noise Reduction Encoder (NR) and set the modulation degree to 30%, and then turn ON the NR. Set the modulation degree at the output of low frequency Signal Generator. Leave the Sound Modulator VR of the IF modulator as it is.



(SAP receiving check)
Check that SA is indicated in red under CH indication by pressing RECALL key of Remo-Con check jig.

Adjustment Procedure

(1) Select Sound Input Signal ① and adjust VR(R42A) so that 300 Hz level is minimum.
(2) Select Sound Input Signal ② and adjust VR(R429) so that 3KHz level is minimum.
(3) Repeat (1) and (2).
Adjustment precision: within + 1dB from minimum point.

1-9-5 SAP Receiving Check

Adjustment Preparation

(1) Same as in items 1-9-4. (1) - (4).
(2) Set to "MTS MODE" to "SA".

Adjustment Procedure

(1) Select Sound Input Signal ① and designate the Output Level as Vst.
(2) Then select Sound Input Signal ④ and check that the Output level is almost the same as Vst.

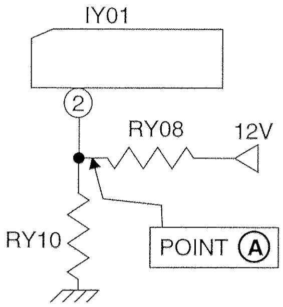
1-10. YNR Operation Check (35V ONLY)

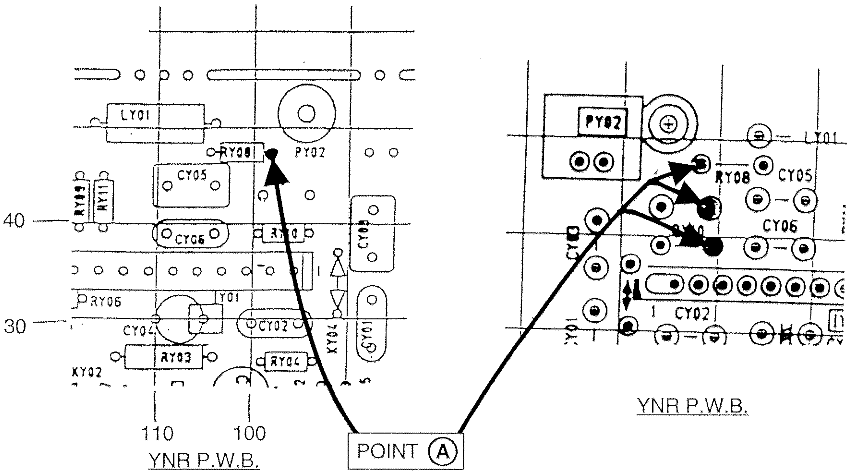
Adjustment Preparation

(1) Receive Circle Pattern

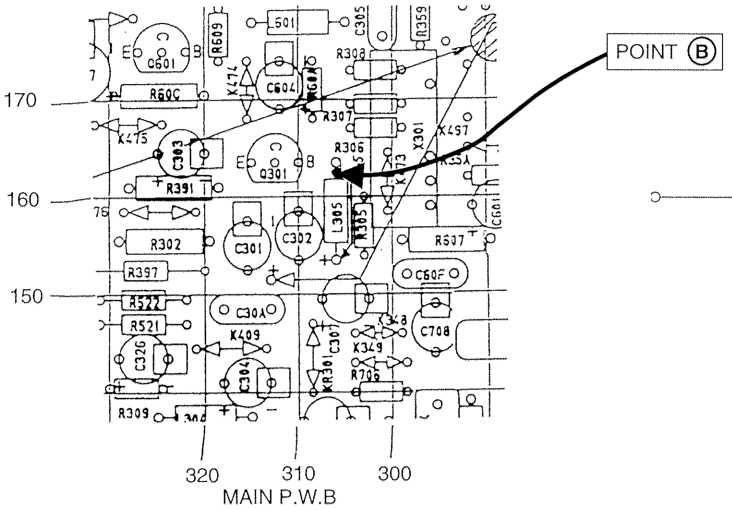
Adjustment Procedure

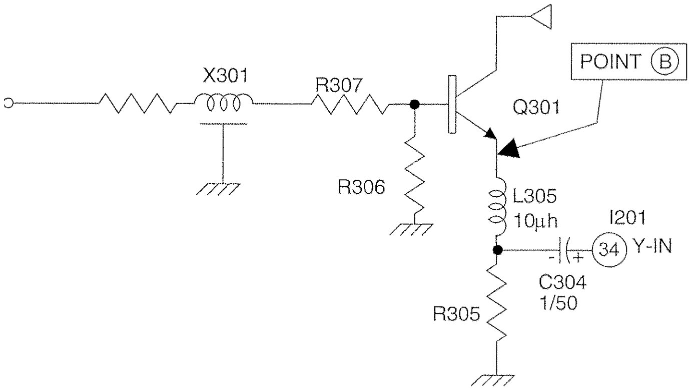
(1) Connect the DC Voltmeter to point Ⓐ of YNR P.W.B. and check that the DC Voltmeter is 9.3V ± 0.3V.


IY01
②
RY08
12V
RY10
POINT Ⓐ


LY01
RY08
PY02
CY05
CY06
RY06
CY04
CY02
RY03
RY04
XY02
XY04
40
30
110
100
YNR P.W.B.
POINT Ⓐ
PY02
RY08
CY05
LY01
CY06
CY02
YNR P.W.B.

(2) Connect the DC Voltmeter to point Ⓑ of MAIN P.W.B. and check that the DC Voltmeter is 1.15V ± 0.3V.


POINT Ⓑ
Q601
R609
R60C
C604
R308
R307
R306
X301
Q301
C303
R391
R302
C301
C302
L305
R305
R637
C60F
R397
R522
R521
C30A
C326
C304
C307
C708
R706
R309
170
160
150
320
310
300
MAIN P.W.B


X301
R307
POINT Ⓑ
Q301
R306
L305
10μh
I201
34
Y-IN
C304
1/50
R305

2. FINAL ADJUSTMENT/COMMON SERVICE ADJUSTMENT

2-1. Purity Convergence Adjustment

Note: For A80LJF30X (HITACHI 32V Dark Tint)
applies to item 2-1-1(8)
For ITC TYPE A89AEJ15X01 (35V Dark Tint) only
applies to item 2-1-1 (8) (PURITY Check).

Preparation of Adjustment

(1) Keep DY attached to CPT funnel.
(2) Turn ON the set and receive Crosshatch Signal (or Circle Pattern Signal). Adjust the Static Convergence coarsely according to item 2-1-3.
(3) Receive Circle Pattern Signal and adjust the White Balance according to item 2-4.
(4) Set BRIGHTNESS control and CONTRAST control to maximum, and heat-run the set with Circle Pattern Signal received for 40 minutes or more.

2-1-1. Purity Adjustment

THIS ADJUSTMENT METHOD APPLIES TO THE PURITY ADJUSTMENT BY USING MICROSCOPE

(1) Adjust coarsely White Balance, Static Convergence (center) and Focus.
(2) Receive Circle Pattern and heat-run more than T minutes with CONTRAST and BRIGHTNESS maximum. Do not delete the raster nor vary the current before fixing the position of DY. Heat-run should be done with perfect raster.
(DY and Tilt should have been coarsely adjusted)

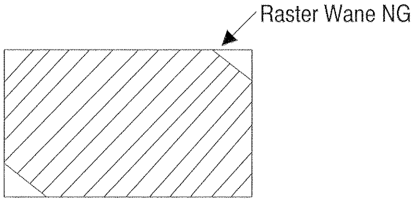


TABLE 1.*

CPT	T
A80LJF30X	45 Min

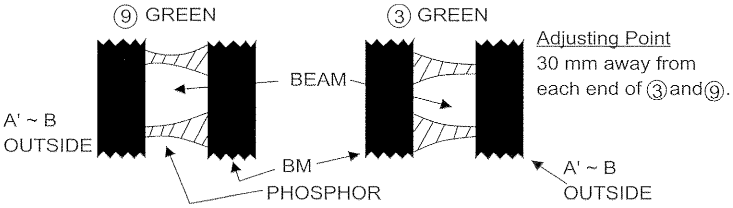
(3) The magneticic field in the artificial magnetic field should follow the table below and the set should face as table 2. Degauss it from the outside.

DESTINATION	VERTICAL FIELD	HORIZONTAL FIELD
USA	0.45 G	0.3 G
CANADA	0.54 G	0.15 G
UNIVERSAL	0.35 G	0.3 G
PANAMA, HAWAII	0.2 G	0.3 G
TAIWAN	0.22 G	0.37 G

TABLE 2. Directions for adjustment

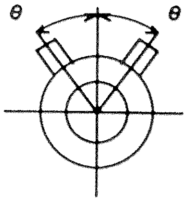
A80LJF30X	North

(4) Adjust the position of Purity Magnet and DY, keep the landing balance of ③ and ⑨, and adjust so that the landing of ③ and ⑨ is as follows while observing with a microscope.
A80LJF30X

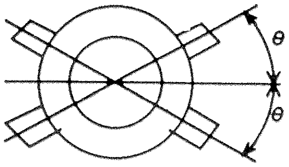


Adjusting Point
30 mm away from each end of ③and⑨.

(A) Open the Purity Magnet as follows in order to move the raster only in the right-left direction.

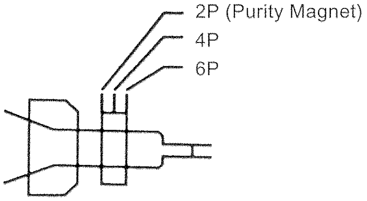


C-F MAGNET
P#2773671



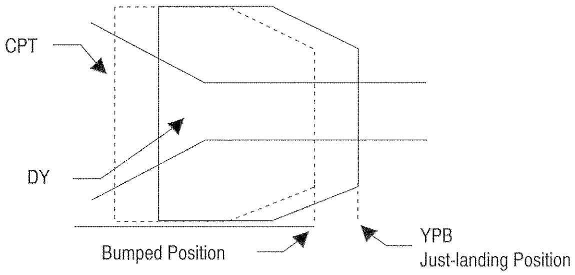
C-F MAGNET
P#2773672

Keep the balance of ③/⑨ DY landing



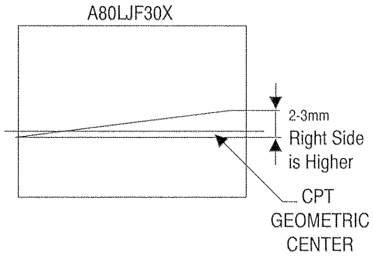
(B) YPB (Yoke Pull-Back) should be as follows.
(Distance between the bumped position of DY toward the funnel and the just-landing position of ③ and ⑨.)

CPT	YPB (DESIGN CENTER)
A80LJF30X	2.2mm



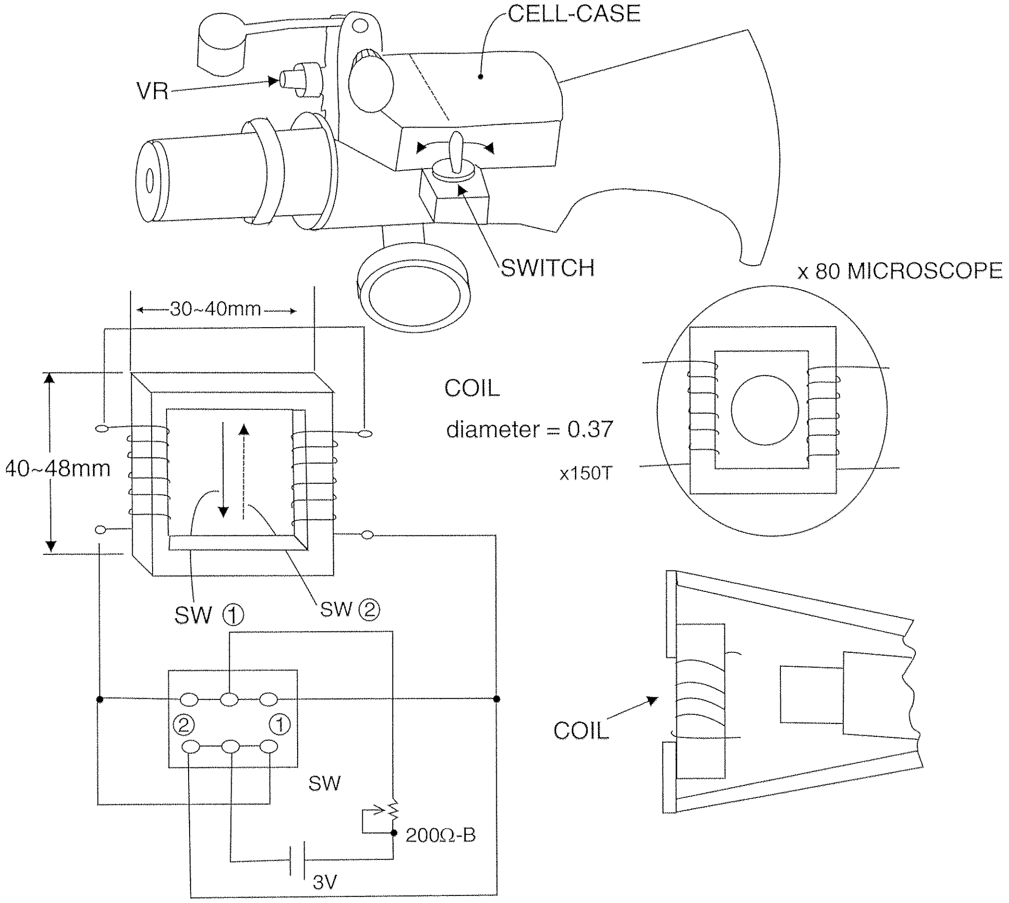
(C) DY Tilt should be as follows:

FACE: North



(5) Fix DY with fixing torque of 14kg.cm
Control the torque by an electrical driver.
(6) If any mislanding occurs, correct with magnets.
At this time, if the white uneveness is all right, any magnet is not needed.
(7) After peripheral convergence is adjusted, check the position of DY and tighten the DY again. (14kg.cm)

Reference THE JIG


CELL-CASE
VR
SWITCH
x 80 MICROSCOPE
30~40mm
40~48mm
COIL
diameter = 0.37
x150T
SW ①
SW ②
② ①
SW
200Ω-B
3V
COIL

Fix coil to CRT side of microscope. Set it up side down and measure it. Check that beam moves to the right and left equally in quantity.

(8) Purity Check
The magnetic field in the artificial magnetic field should follow the magnetic field according to the destination, and the set should face as follows. After degaussing in each direction, check these items visually and with a microscope.
(A) No problem in white uneveness.
(B) Each single color must not hit any other colors.
(C) If white or each single color is defective, apply a magnet (S) on CPT for correction.
If any magnet is applied, check it after degaussing.

CPT	CHECK FACE
A80LJF30X	SOUTH, NORTH
A89AEJ15X01	SOUTH, NORTH

2-1-2. Purity Adjustment

(THIS ADJUSTMENT METHOD APPLIES TO THE HAND-OPERATED PURITY ADJUSTMENT.)

(1) Use the Earth's magnetic field (Location of the set).
(2) Adjust Focus coarsely according to item 2-2.
(3) Adjust Convergence coarsely according to item 2-1-4.
(4) Receive Circle Pattern Signal and check that CONTRAST and BRIGHTNESS are maximum.
(5) Receive Magenta Signal. When the Magenta Signal is not available, short-circuit between the Base and Emitter of Q855 to set to Magenta.
(6) Press DY fully against CPT funnel and turn the Purity Magnet so that the Vertical Magenta Band comes to the center of the picture. (Fig. 2-1-2-1) Check that color uneveness of both sides are approximately equal at this time.
The openings of the Purity magnet should be symmetric. (Fig. 2-1-2-2)

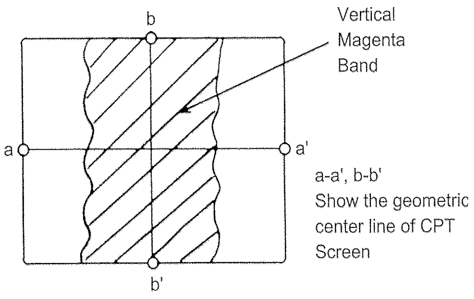

b
Vertical Magenta Band
a
a'
a-a', b-b' Show the geometric center line of CPT Screen
b'

Fig. 2-1-2-1

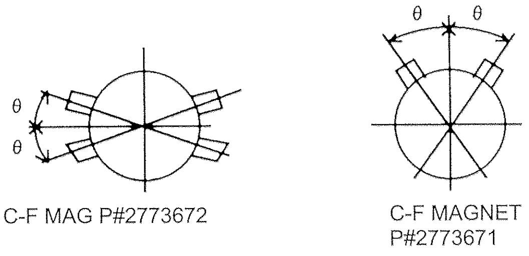

θ
θ
θ θ
C-F MAG P#2773672
C-F MAGNET P#2773671

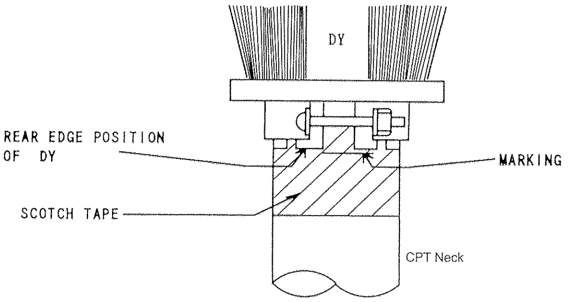
Fig. 2-1-2-2

The openings of purity magnet should be symmetric on the right and left sides (P#2773671) and on the upper and lower sides (P#2773672).

(7) Receive the Single Red Signal.
When the Single Red Signal is not available, short-circuit between the Base and Emitter of Q854, and between the Base and Emitter of Q857 to set to Single Red Signal.

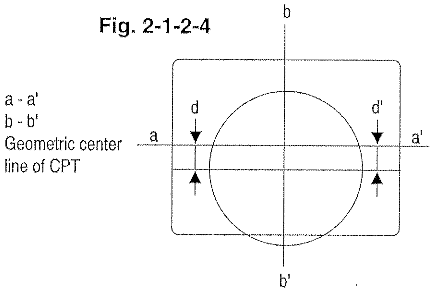
(8) Pull back DY gradually and when the color uneveness of both sides of the picture disappear, mark the rear edge position of DY on the tape wound around CPT neck as shown in Fig. 2-1-2-3. Pull back DY further and just before the color uneveness starts to appear on both sides of the picture, mark the rear edge position of DY on the tape by the same way.
At this time, pull back DY so that the center axis of DY and CPT axis match.

Fig. 2-1-2-3


DY
REAR EDGE POSITION OF DY
MARKING
SCOTCH TAPE
CPT Neck

(9) Move DY so that the rear edge position of DY comes to the center of the two marked lines and fasten DY as d = d'. (Fig 2-1-2-4).
Further insert the rubber wedge between DY and CPT funnel from the top and raise DY backwards.

Fig. 2-1-2-4


b
a - a'
b - b'
Geometric center line of CPT
a
d
d'
a'
b'

(10) Set CPT axis direction magnetic field according to the Earth's magnetic field setting.
(The direction of the magnetic field should be from the CPT screen side to the neck side.)

(11) After degaussing it from outside, check the Purity in each color of R,G and B visually. Then, turn the screen to White and check the landing at the screen position shown in Fig. 2-1-2-5 with a microscope.

Criteria with microscope
There should be no mislanding at positions 2-4-8 and 10. (Refer to the mislanding criteria)
Green beam should be at the center of the green phosphor at position C.

(12) Turn over the direction of CPT axis direction magnetic field of the Earth's magnetic field and check it by the same C way as item (11). The positions of mislanding criteria with microscope should be 2, 4, 8 and 10. (Fig. 2.-1-2-5)

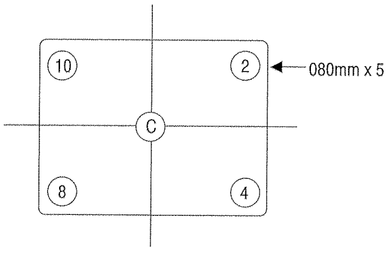

10
2
080mm x 5
C
8
4

Fig. 2-1-2-5

Mis-Landing Criteria
The following conditions are defined as mislanding. Each color beam shines on the phosphor of the applied color and there are phosphor parts which are not luminous (shaded parts in the Fig. 2-1-2-6) between the luminous part and black matrix or each color beam shines on the phosphor of not applied color.

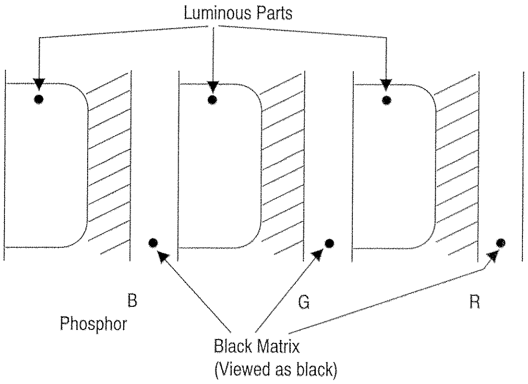

Luminous Parts
B
G
R
Phosphor
Black Matrix
(Viewed as black)

Fig. 2-1-2-6 Enlarged view of screen with microscope

(13) To improve the mislanding mentioned above, it's acceptable to stick the permanent magnet to CPT funnel.
(Fig. 2-1-2-7 and Fig. 2-1-2-8)

Usage
Apply a silicone rubber KE-4O WRTV to the permanent magnet shown in the Figure 2-1-2-8. , adhere it to CPT funnel and then fix it with permaseal tape.

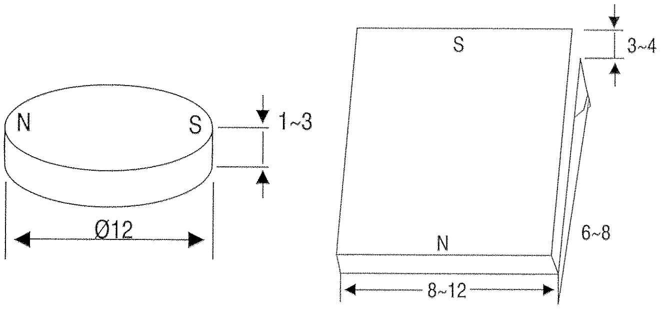
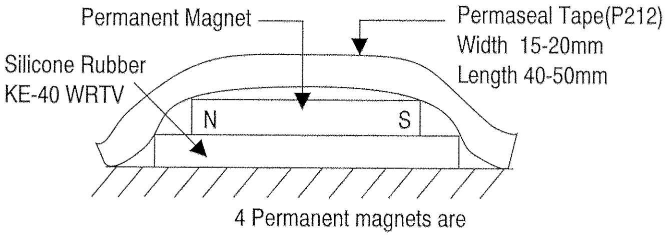

N
S
1~3
Ø12
S
N
3~4
6~8
8~12

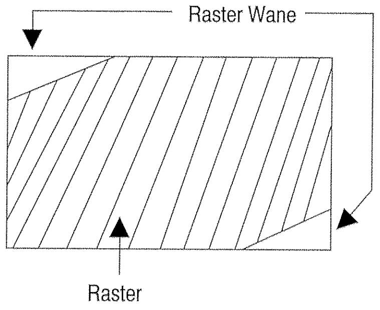
Fig. 2-1-2-7


Permanent Magnet
Permaseal Tape(P212)
Width 15-20mm
Length 40-50mm
Silicone Rubber
KE-40 WRTV
N
S

4 Permanent magnets are usable at most.

Fig. 2-1-2-8

Notes for pre-heat
Before pre-heating, stick DY to CPT funnel and fix it so that the raster is perfect.


Raster Wane
Raster

If the raster is imperfect like the figure, CPT neck is in danger of cracking because the beam may hit it.

2-1-3. Static Convergence Adjustment (Screen Center Part) (Except ITC CPT)

(1) Receive the Crosshatch Signal and set BRIGHTNESS to center, CONTRAST to minimum.

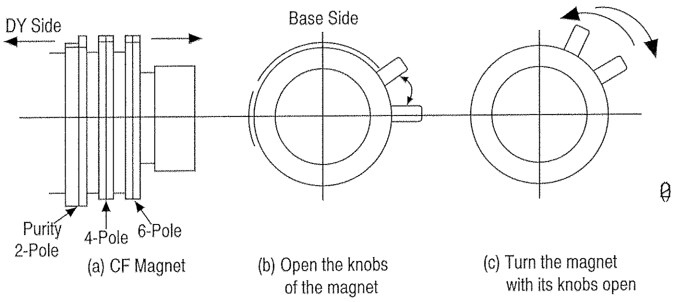
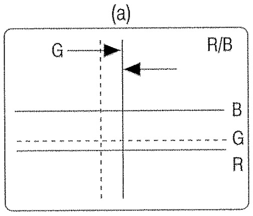

DY Side
Base Side
θ
Purity 2-Pole
4-Pole
6-Pole
(a) CF Magnet
(b) Open the knobs of the magnet
(c) Turn the magnet with its knobs open

Fig. 2-1-3-1

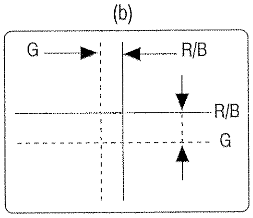
Open the knobs of 4-pole magnet (2 sheets)(Fig. 2-1-3-1(b)) and match the blue/red vertical lines at the center of the screen as shown in fig. 2-1-3-2(a).

Fig. 2-1-3-2



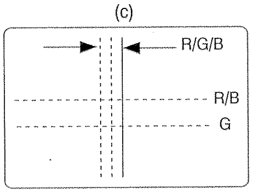
(3) Turn the 4-pole magnet with its knobs open (Fig. 2-1-3-1(c)) and match the blue/red horizontal lines as shown in Fig. 2-1-3-2(b).

Fig. 2-1-3-2



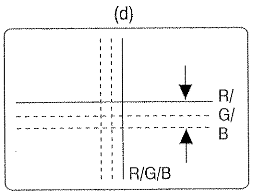
(4) Open the knobs of 6-pole magnet (2 sheets) and match the green vertical line at the center of the screen to the blue/red vertical lines shown in Fig. 2-1-3-2(c).

Fig. 2-1-3-2



(5) Turn the 6-pole magnet with its knobs open and match the green horizontal line at the center of the screen to the blue/red horizontal lines as shown in Fig. 2-1-3-2(d).

Fig. 2-1-3-2



(6) After the adjustment of items (1) - (5), if red/blue/green (3 colors) do not match, repeat the adjustment of (1) - (5).

(7) After checking that Purity and Static Convergence are adjusted to the best condition, fix C-F Magnet with white paint.

2-1-4. Dynamic Convergence Adjustment (Except ITC CPT Type)

(1) Insert an adjustment wedge (temporary) between the top of DY opening and CPT funnel as shown in Fig. 2-1-4-1. By inserting the wedge gradually, match the red and blue vertical lines at the top and bottom of the screen and also match the red and blue horizontal lines of both sides of the screen as shown in Fig. 2-1-4-2 (a).

(2) Adjust the swinging in the right/left directions of DY while observing 6 and 12 horizontal lines of the screen and match the red and blue horizontal lines.
As shown in Fig. 2-1-4-2 (b), when the blue is outside from the red on CPT screen, insert the DY fixing wedge between the right-side DY viewed from the rear of CPT and CPT funnel.

(3) AS shown in Fig. 2-1-4-2 (c), when the blue is inside from the red on CPT screen, insert the wedge between the left-side DY and CPT funnel.

(4) Insert two DY fixing wedges with approx.120 to the DY fixing wedge inserted in the Items (2) or (3) and remove the adjustment wedge (temporary).
Use the DY fixing wedge after peeling off the tape. After the location, press and adhere it to the funnel.

HITACHI CPT A80LJF30X

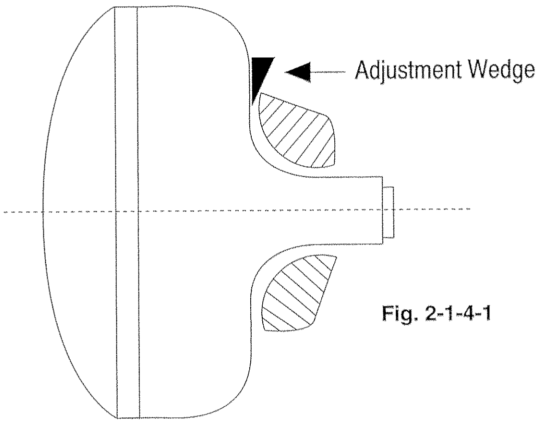


Fig. 2-1-4-1

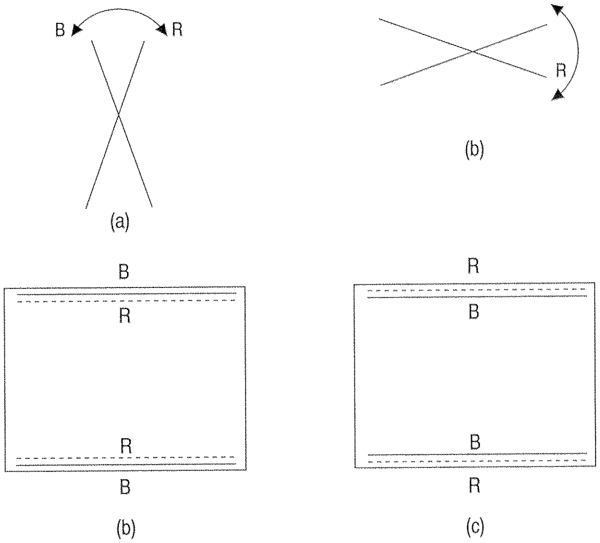


Fig. 2-1-4-2

2-2 Focus Adjustment

NO.	MODEL	CPT	CONDITION	FOCUS VR SETTING POSITION
1	35CX30B CZ63 35TX88B CZ63 35TX89K CZ63	A89AEJ15X01	• Receive the Crosshatch Signal • Picture Control: Maximum • Sharpness Control: Center • Brightness Control: Where the back ground is set.	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of the 5th vertical line from the screen center becomes best.
2	32CX11B CY61	A80LJF30X (HED-US)	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of center vertical line from the screen center becomes best.
3	32TX78B CY60	A80LJF30X (HED-US)	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of center vertical line from the screen center becomes best.
4	32TX79AK CY60	A80LJF30X (HED-US)	Same as above	Turn the Focus VR gradually clockwise from the full counterclockwise. Then set it to the point where the focus of the 6th vertical line from the screen center becomes best.

2-3. Deflection Circuit Picture Adjustment

2-3-1. Horizontal Center Adjustment VR(R704)

Adjustment Preparation

(1) Receive Circle Pattern Signal. Set CONTRAST to maximum and BRIGHTNESS to center.

Adjustment Procedure

(1) Adjust H. size marker, turn VR(R704) to adjust difference of right and left horizontal size marker is within 0.5.

2-3-2. Vertical Size Adjustment VR(R62A)

Adjustment Preparation

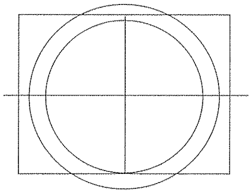
(1) The set should face the North or South.
(2) Receive Circle Pattern Signal, and set CONTRAST to maximum and BRIGHTNESS to center.

Adjustment Procedure

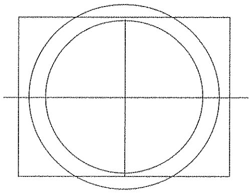
(1) Adjust V. size VR(R62A) so that the outer circle of the Circle Pattern is like the figure.

Note: Wait 5 minutes or more after turning the power ON to perform this adjustment.

(i) When the picture center is below CPT center
Adjust so that 1/2 of the width of the outer circle comes to the top of the screen.

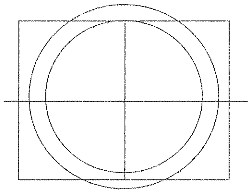


(ii) Standard Condition
Adjust so that the inner circle comes in contact with the top and bottom of the screen.



(iii) When the picture center is above CPT center.

(1) When the picture center is 0-2 mm above CPT center, adjust so that the bottom of the inner circle comes in contact with the bottom of the screen.



(2) Except for the above, adjust so that 1/2 of the width of the outer circle comes to the bottom of the screen.

2-3-3. Side Pin Distortion Adjustment VR(R752)

Adjustment Preparation

(1) Receive Crosshatch Signal and set CONTRAST to maximum and BRIGHTNESS to the point where the background is set.

Adjustment Procedure

(1) Adjust VR(R752) so that the line of the right and left is straight.

2-3-4. Horizontal Size Adjustment VR(R755, R775)

Adjustment Preparation

(1) Receive Circle Pattern Signal.
(2) Set CONTRAST to maximum and BRIGHTNESS to center.

Adjustment Procedure

(1) Set the VR(R775) at the counterclockwise end.
(2) Vary VR(R755) so that the horizontal size markers at the right and left end are A - A on the average.*
(3) Vary VR(R775) so that the horizontal size markers at right and left are B - B on the average.*
(4) Vary VR(R704)so that the difference of the horizontal size markers at the right and left end are within 1.5.

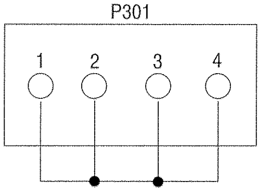
*

CPT SIZE	A	B
35V	0.5	1.0
32V	1.0	1.5

2.4. White Balance Adjustment

Adjustment Preparation

(1) Apply heat-run 10 minutes or more after the power is turned ON.
(2) Check that the Purity Adjustment has been completed.
(3) Set the vertical incident illumination on the CPT surface to 20 lux or less.
(4) Receive White Raster Signal.
(5) Set Drive Adjusting VRs (R806, R816) to the mechanical center.
(6) Turn Low Brightness White Balance adjusting VRs(R807, R814, R818) fully counterclockwise.
(7) Set the Color Temperature Control (White Control) to OFF (WARM).
(8) Turn the SCREEN Adjusting VR fully counterclockwise.
(9) Short circuit TP connector pin 1~4.



Adjustment Procedure

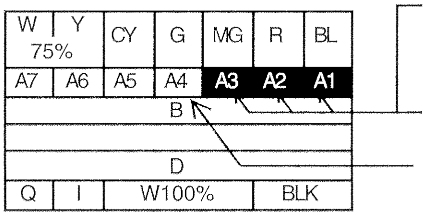
(1) Turn the SCREEN Adjusting VR clockwise and set it to the position where the bright colored line starts appearing on CPT screen. Do not turn thereafter the Low Brightness White Balance VR (This is called VR-A) corresponding to the color first appearing. When a bright colored line does not appear, set the SCREEN VR fully clockwise.
(2) Turn clockwise the Low Brightness White Balance VRs except VR-A and adjust so that the red, green and blue bright colored lines appear on the screen equally.
(3) Remove the jig which has shorted TP connector.
(4) Set CONTRAST and BRIGHTNESS control to minimum and turn SUB-BLACK LEVEL VR (R340) to set at the position where the white raster is just slightly seen.
(5) Set the White Balance Meter at the center of the screen.
(6) Adjust CONTRAST control so that the indication of the Brightness Meter is 80% of the full scale. Then, turn the Drive adjusting VRs (R806, R816) and adjust the High-Brightness White Balance.
(7) Adjust CONTRAST control to minimum and check that the Low-Brightness White Balance is obtained by directly observing the CPT surface, without using a mirror.
(8) When the Low Brightness White Balance is not obtained, adjust other Low-Brightness White Balance VRs except VR-A and return to item (6). **White Balance Color Temperature Setting 7,200K.**
(9) Set White Control (Color Temperature Control) to ON (COOL), and check that Color Temperature is approximately 9,300'K.

2-5. Sub-Black Level Adjustment VR(R340) Adjustment Preparation

(1) Apply heat-run for 10 minutes or more after the power is turned ON.
(2) Receive Color Bar Signal.
(3) Set CONTRAST and COLOR Controls to minimum.
(4) Set the vertical incident illumination on the CPT surface to 20 lux or less.
(5) Set BRIGHTNESS Control to the center position.
(6) Set White Control to OFF (WARM).

Adjustment Procedure

(1) Turn SUB-BLACK LEVEL adjustment VR (R340) as follows. SUB-BLACK LEVEL adjustment the background of A1,A2, A3 are set to black and A4 is set lighter black.



The background is set to black. Perform the adjustment without observing the boundary parts.

The background is set to lighter black.

(2) Check by directly observing the CPT surface, without using a mirror.

2-6. AGC Adjustment VR(R202)

Adjustment Preparation

(1) After all the adjustments are finished, heat-run 5 minutes or more in signal receiving condition.
(2) Receive Color Bar Signal or High-VHF Channel (CH10).
(3) Set CONTRAST to maximum, and BRIGHTNESS to On-Screen Display center.
(4) Antenna input power: -53dBm^{+1}_{-0} (-53dBm ~ -52dBm)
(5) Connect DC Voltmeter of internal resistance 1MΩ or more to TPI5.

Adjustment Procedure

(1) Adjust AGC Adjustment VR (R202) until the indication of DC Voltmeter does not change any more at the maximum point. The reading of DC Voltmeter is named V1.
(2) Adjust AGC Adjustment VR (R2O2) so that the indication of DC Voltmeter is {V1-(0.5 ± 0. 2)}V. Verify that there is no video noise visibly seen.

2-7. Channel Selector Operation Check

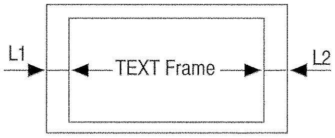
2-7-1. CCD Display Position Adjustment.

Adjustment Preparation

(1) Receive an Encoded Signal of Closed Caption Signal.
(2) Press and hold down the AVX key and press POWER key of MAIN P.W.B. front keys, turn ON the set.

Adjustment Procedure

(1) When the TEXT from the CAPTION appears On Screen. Adjust the size of TEXT and from area satisfies the following specification by using (◀) , (▶) control buttons.



CPT Effective Screen
/ L1- L2 /≦2mm or
less at CPT Center

2) When the adjustment item(1) is finished, turn OFF the set by the POWER key.

2-8. Matching Check With Other Equipments

2-8-1. VIDEO 1 Input Terminal Matching Check

Adjustment Preparation

(1) Input a Video Signal to the VIDEO 1 terminal.
The Video Signal Level should be within 1 ± 0.2 Vp-p (75 ohm termination) with 100% White Signal.
(2) Input an Audio Signal to the AUDIO 1 terminal. The Audio Signal Level should be 400m Vrms ± 2m Vrms at this time. (Connect VCR or TV TUNER)
(3) Connect an Audio AMP to the AUDIO OUT terminals. (Or connect VIDEO and AUDIO terminals of a standard monitor.

Adjustment Procedure

(1) Check that the set receives signal when the INPUT1 Mode is selected, by pressing the INPUT (FUNCTION) button on the front side of the set.
(2) When an External Input is performed, the Video and Audio should not be abnormal.
The 100% White Signal that RF input receives should be as bright as the Video Signal 1Vp-p (75 ohm termination). As for the sound, when the 100% modulation that RF input receives is 25KHZ, DIV., the Sound Level should be as much as the External Audio Signal (400 Vrms) level.

2-8-2. VIDEO 2 Input Terminal Matching Check.

Adjustment Preparation

(1) Same as 2-8-1.

Adjustment Procedure

(1) Check that the set receives signal at INPUT2 Mode.

2-8-3. VIDEO 3 Input Terminal Matching Check

Same as 2-8-2.

2-8-4. S -IN Input terminal Matching check.

Adjustment Preparation

1. (1) Connect the Video/Chroma Signal to S-IN terminal.
2. (2) Connect the Sound Signal to AUDIO 1 input terminals.

Adjustment Procedure

(1) Check that the set receives signal at S-IN Mode.

2-8-5. AUDIO Output Level Check

Adjustment Preparation

(1) Input the same Audio Signal as Item 2-8-1 (2) to AUDIO IN terminal(L). At this time, connect nothing to R terminal.
(2) Input the same Audio Signal as Item 2-8-1 (2) to AUDIO IN terminal (R). At this time, connect nothing to L terminal.
(3) Check that the Normal Sound is output from both sides of the speakers when signal in item (1) is input.
(4) Check that the Normal Sound is output from only the right ((R) speaker when signal in Item (2) is input.

Adjustment Procedure

(1) Check that the Audio Output of AUDIO AMP connected to AUDIO Hi-Fi OUT terminals or monitor changes according to the "VOLUME" of the set.
(2) Confirm that the Output Level of item(1) should be 1Vrms (2.8 Vp-p) ± 20%. (Above level is equivalent to maximum VOLUME,100% Modulated Signal Input.)

2-9. Safety Check

2-9-1. Polarity Check

There should be electricity between AC Power Cord and Chassis Earth.

2-10. MTS Operation Check

2-10-1. STEREO/SAP Broadcast Receiving Check

Adjustment Preparation

(1) Set the set so that a MTS Broadcast (STEREO/SAP) can be received.
(2) Set MTS Mode to STEREO or SAP Mode.
Note: To select between "STEREO/SAP", display sound setting of MTS Mode and select SOUND MENU.
(3) Set BALANCE to the center.

Adjustment Procedure

(1) When one of the MTS Broadcast Stereo or SAP is received, check that "ST" or "SA" is displayed on the screen.

STEREO	11
or SAP	ST
	or SA

(2) STEREO Broadcast Receiving Check
  (I) Select MTS Mode and press ENTER button to display "STEREO" on the screen.
  (II) When only Lch signal is received, Lch sound comes out from the left speaker.
  (III) When only Rch signal is received, Rch sound comes out from the right speaker.
  (IV) When Monaural Signal is received, Monaural Sound comes out from both of the right and left speakers.
(3) SAP Broadcast Receiving Check
  (I) Select MTS Mode and press ENTER button to display "SAP" on the screen.
  (II) SAP signal comes out from both of the right and left speakers.
  (III) When no SAP signal, the sound on "MAIN" side comes out.
  Note: When the Channel selection is performed or RECALL button is operated "ST" or "SA" is shown below the Channel No. (For approximately 8 seconds)

2-10-2. MTS Mode Check

Adjustment Preparation

(1) Set the set so that a MTS Broadcast (STEREO/SAP) can be received.
(2) Set BALANCE to the center.

Adjustment Procedure

(1) When "MTS MODE" Mode is set to "MONO" side, check that STEREO and MONO indication lamps which have been ON are turned OFF and that Monaural Sound comes out from the right and left speakers.
(2) When "MTS MODE" Mode is set to "STEREO" side, check that STEREO and MONO indication lamps which have been OFF are turned ON and that STEREO and SAP sound can be received.

2-10-3. STEREO Separation Check

Adjustment Preparation

(1) Set the set so that a MTS Broadcast (STEREO/SAP) can be received.
(2) Make Surround "OFF".
(3) Set MTS MODE to "STEREO".
(4) Connect AUDIO OUT terminals L and R to an Oscilloscope.

Adjustment Procedure

(1) When STEREO L only signal (or R only signal) is received, check that the Output Level Ratio of L CH and R CH is 15 dB or more. (Example)

CH	Output Level
L	1.2 Vpp
R	0.21 Vpp or less

When L only is received (100% modulation)

2-11. Setting For Delivery

Setting is possible by Remo-Con jig.

SPECIFICATION BY MODELS

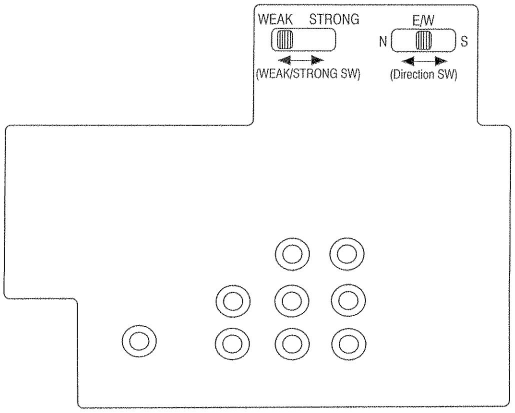
NAME	SPECIFICATIONS BY MODELS
	P IN P
AIR/CABLE	AIR
RECEPTION CHANNEL	CH 03
SOUND (VOLUME)	"10" On-Screen Display
INPUT SELECT (AVX)	TV Mode
CONTRAST	Maximum
COLOR	Center
TINT	Center
BRIGHTNESS	Center
SHARPNESS	Center
WHITE CONTROL	ON: (COOL)
BALANCE	Center
BASS	Center
TREBLE	Center
MTS MODE	STEREO
SURROUND	OFF
LOUDNESS	OFF
INTERNAL SPEAKERS	ON
P IN P	OFF
CLOSED CAPTION	OFF
CLOSED CAPTION MODE	C.C.
CLOSED CAPTION CHANNEL	1

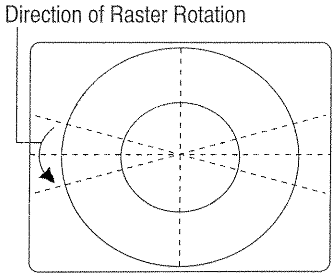
2-12. Magnetic Field Correction Circuit Operation Check. (35V Only)

Adjustment Preperation

(1) Receive Circle Pattern Signal.
(2) Set "Weak/Strong SW" to "Strong".
(3) Set "Direction SW" to "N".
(4) Check that the raster rotates to counterclockwise when "Direction SW" set from "N" to "S".
(5) Set "Weak/Strong SW" set to "Weak.
(6) Set "Direction SW to "N".
(7) Check that the raster rotates to counterclockwise when "Direction SW" set from "N" to "S".
(Check the rotation angle is less than "Strong" position.
(8) Set "Weak/Strong SW" to "Strong" and "Direction SW" to "E/W".

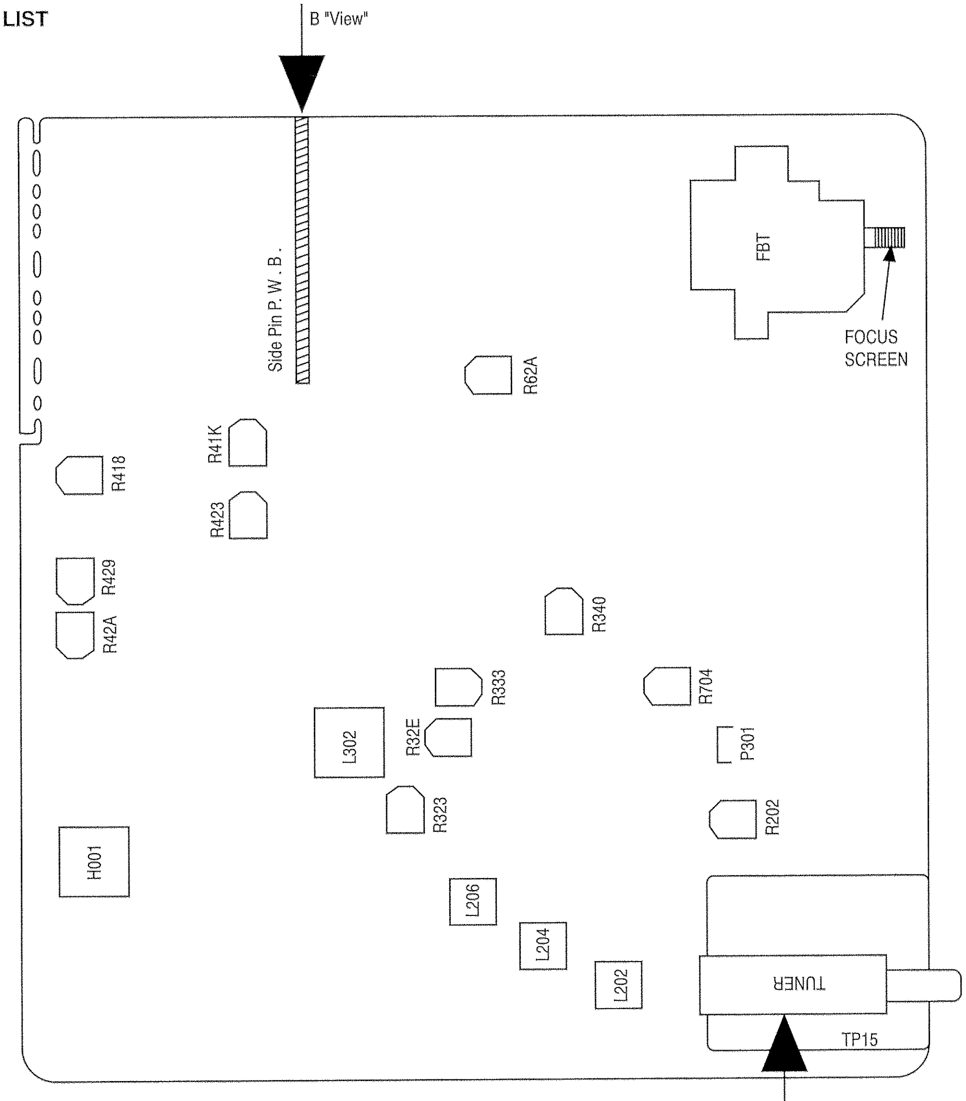
35CX30B/35TX88B/35TX89K REAR PANEL

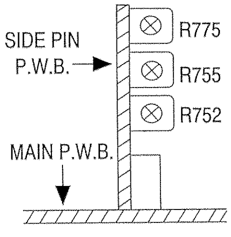

WEAK
STRONG
(WEAK/STRONG SW)
E/W
N
S
(Direction SW)


Direction of Raster Rotation

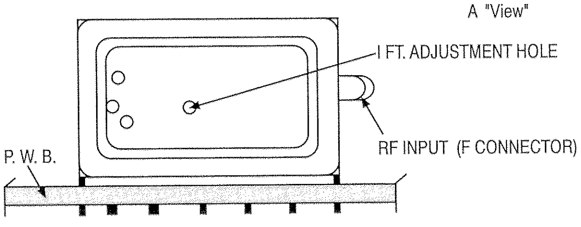
CPT SCREEN

3. ADJUSTMENT POSITION LIST


B "View"
Side Pin P. W. B.
FBT
FOCUS
SCREEN
R62A
R41K
R418
R423
R429
R42A
R340
R333
R704
R32E
L302
P301
R323
R202
H001
L206
L204
L202
TUNER
TP15
A "View"


SIDE PIN
P.W.B.
R775
R755
R752
MAIN P.W.B.

B "VIEW"

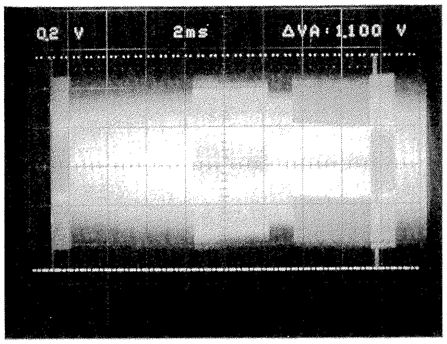

I FT. ADJUSTMENT HOLE
RF INPUT (F CONNECTOR)
P. W. B.

A "VIEW"

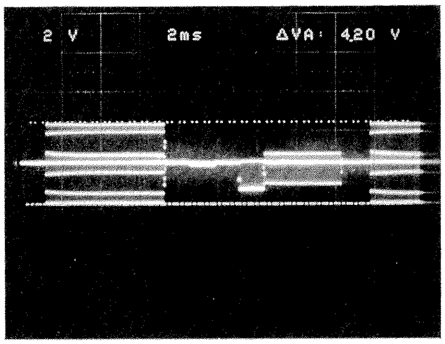
WAVEFORMS AT EACH SECTION

Numbers inside circle correspond to locations shown in the circuit diagram.

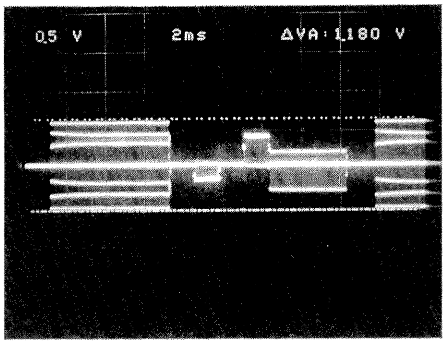
① U101 Pin 7 (IF Out)



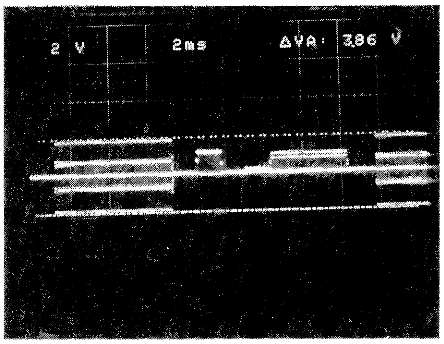
② I201 Pin 18 (R-Y)



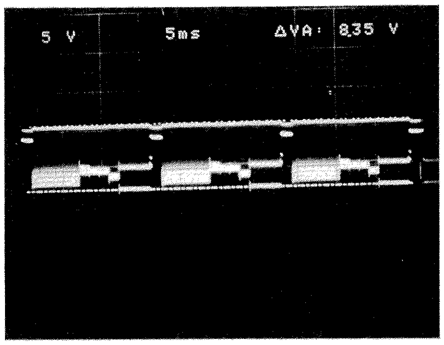
③ I201 Pin 19 (G-Y)



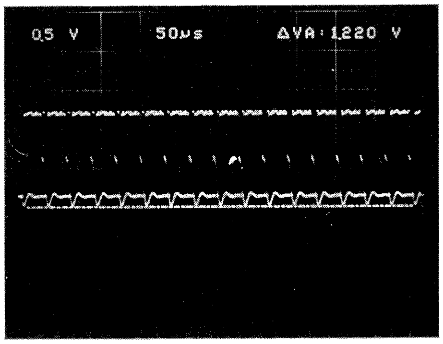
④ I201 Pin 20 (B-Y)



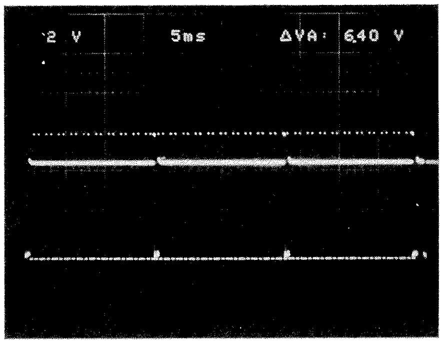
⑤ I201 Pin 21 (-Y)



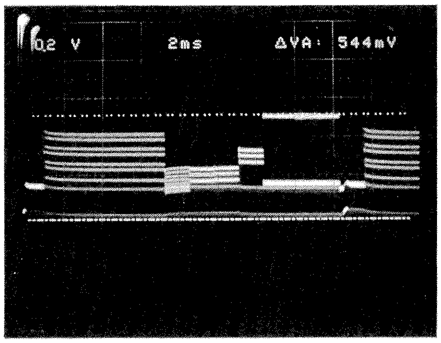
⑥ I201 Pin 23 (H. Out Pulse)



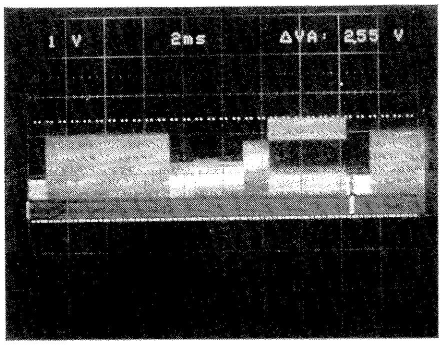
⑦ I201 Pin 28 (V. Out Pulse)



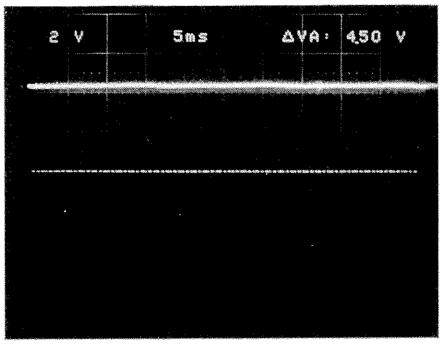
⑧ I201 Pin 34 (Video In)



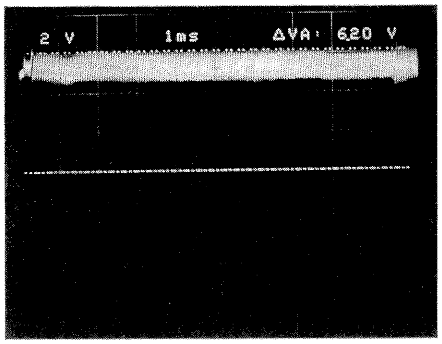
⑨ I201 Pin 44 (Video Det. Out)



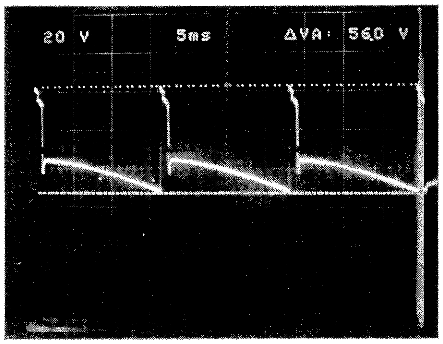
⑩ I201 Pin 47 (AFT Out)



⑪ I201 Pin 49 (RF-AGC Out)



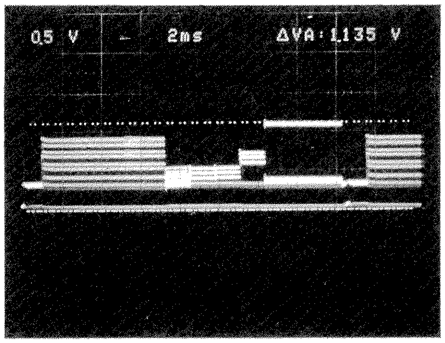
⑫ I620 Pin 12 (V.Out)



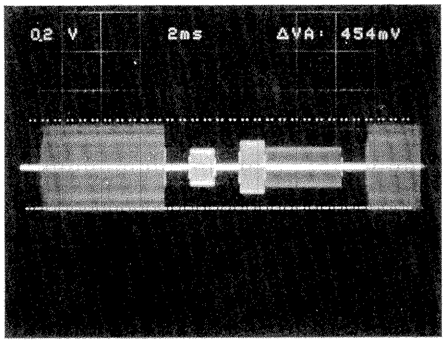
WAVEFORMS AT EACH SECTION

Numbers inside circle correspond to locations shown in the circuit diagram.

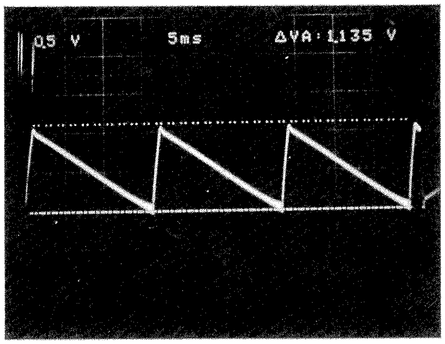
⑬ Q30C Emitter (Y)



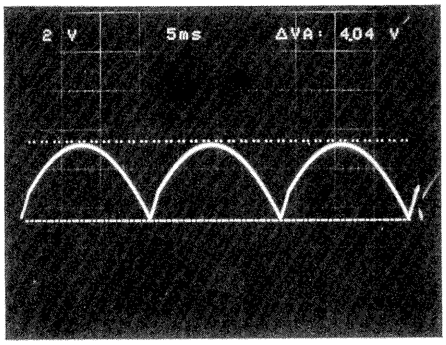
⑭ Q309 Emitter (C)



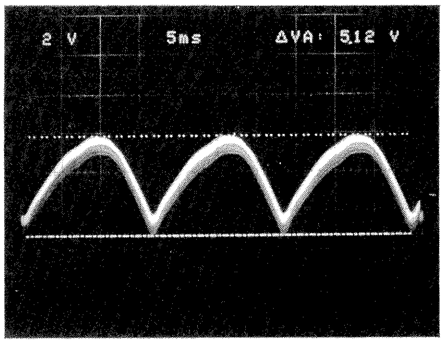
⑮ P65B Pin 1 (Side Pin Amp +)



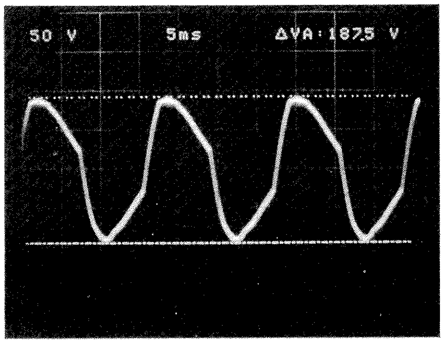
⑯ P65B Pin 2 (Side Pin Amp -)



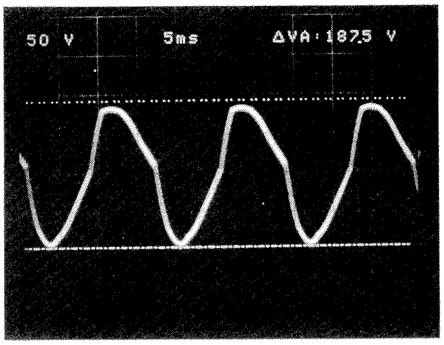
⑰ Q650 Emitter (Side Pin Drive)



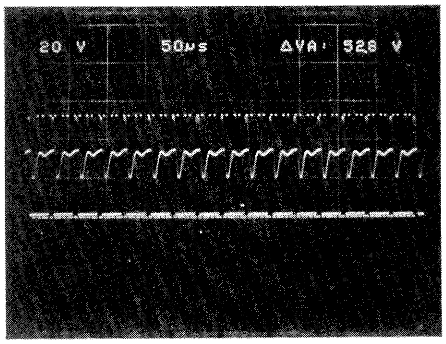
⑱ Q750 Base (Side Pin Adj.)



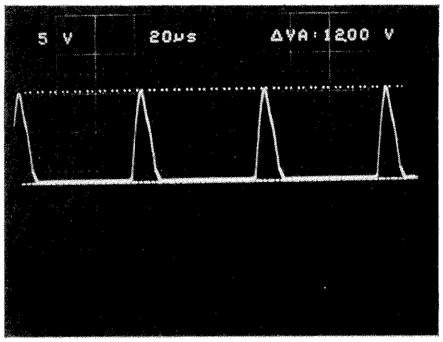
⑲ Q752 Collector (Side Pin Out)



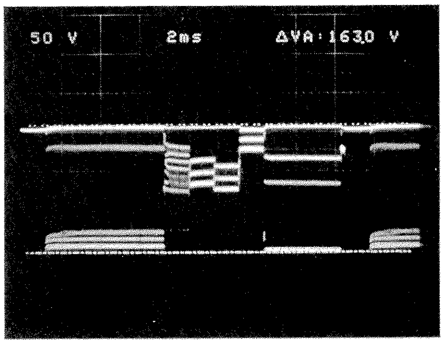
⑳ Q701 Collector (Hor. Drive)



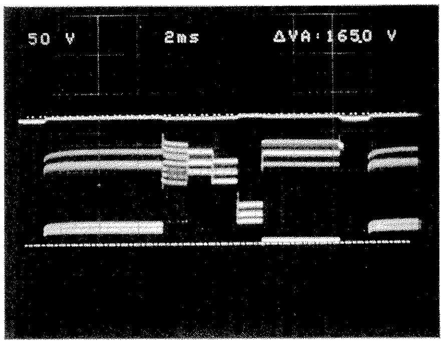
㉑ Q702 Collector (H. Out)



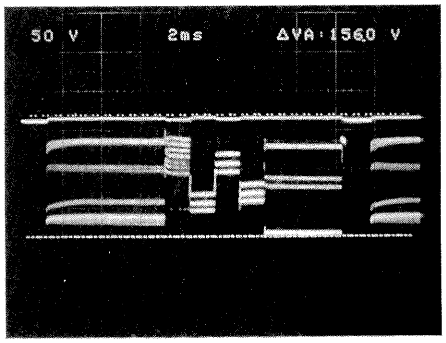
㉒ Q854 Collector (Video Amp. Red)



㉓ Q855 Collector (Video Amp. Green)



㉔ Q856 Collector (Video Amp. Blue)



TROUBLESHOOTING

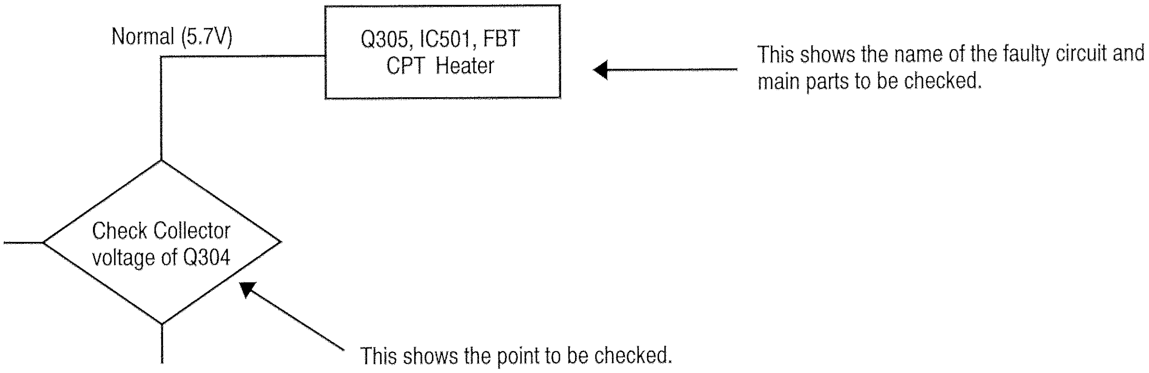
PRODUCT SAFETY NOTE

The shaded and ⚠ marked components have special characteristics important to safety.
Read carefully the Product Safety Notice of each service manual. Don't degrade the safety of the receiver through improper servicing when replacing any of this components.

HOW TO USE THE FLOW CHART

(1) The flow chart shows the following:

This shows the name of the faulty circuit and main parts to be checked.
This shows the point to be checked.

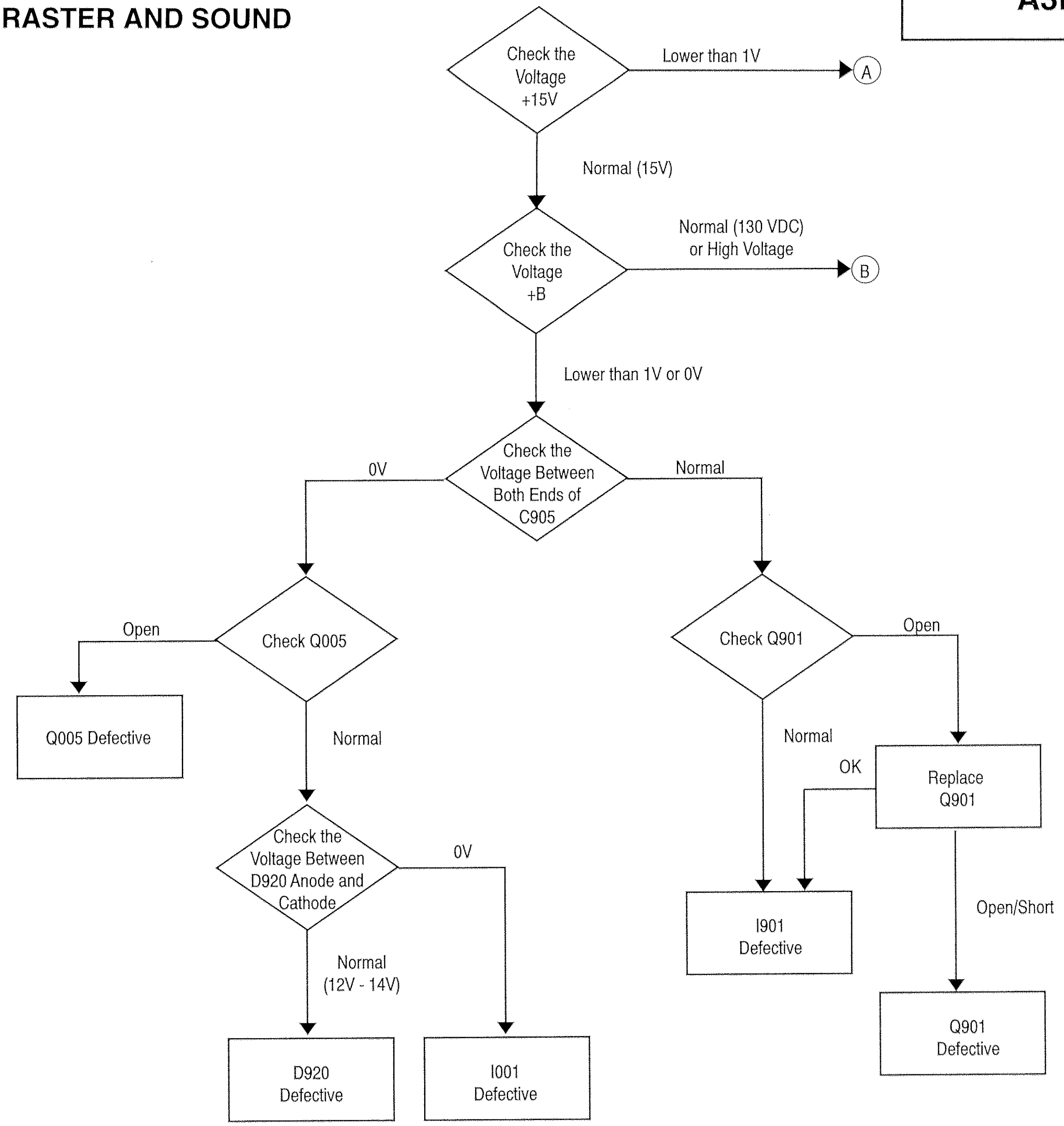

Normal (5.7V)
Q305, IC501, FBT
CPT Heater
This shows the name of the faulty circuit and main parts to be checked.
Check Collector voltage of Q304
This shows the point to be checked.

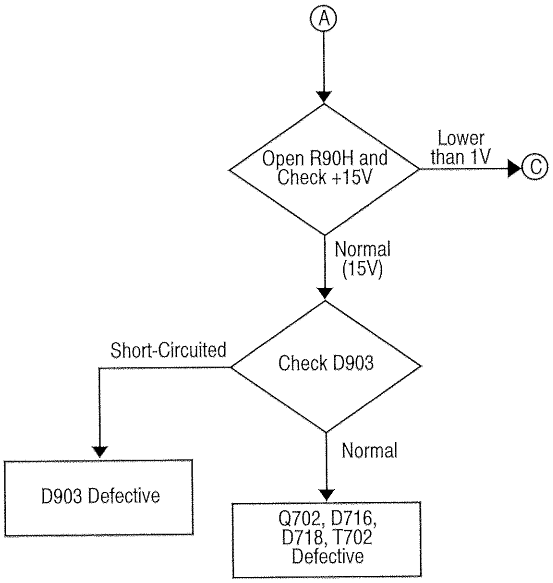
(2) The voltage shown in the chart may differ to some extent depending on the condition of the set and tester.

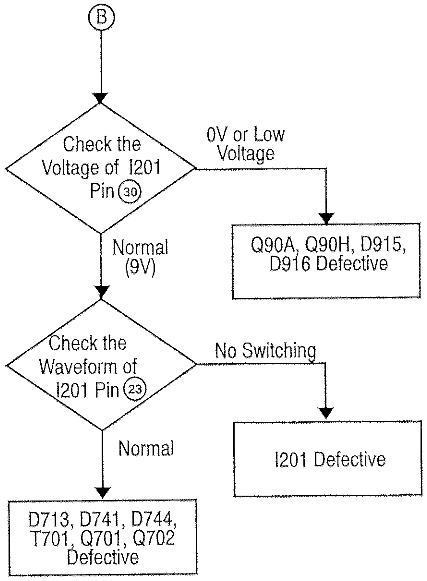
PRECAUTION ON MAKING MEASUREMENTS AND ON HANDLING

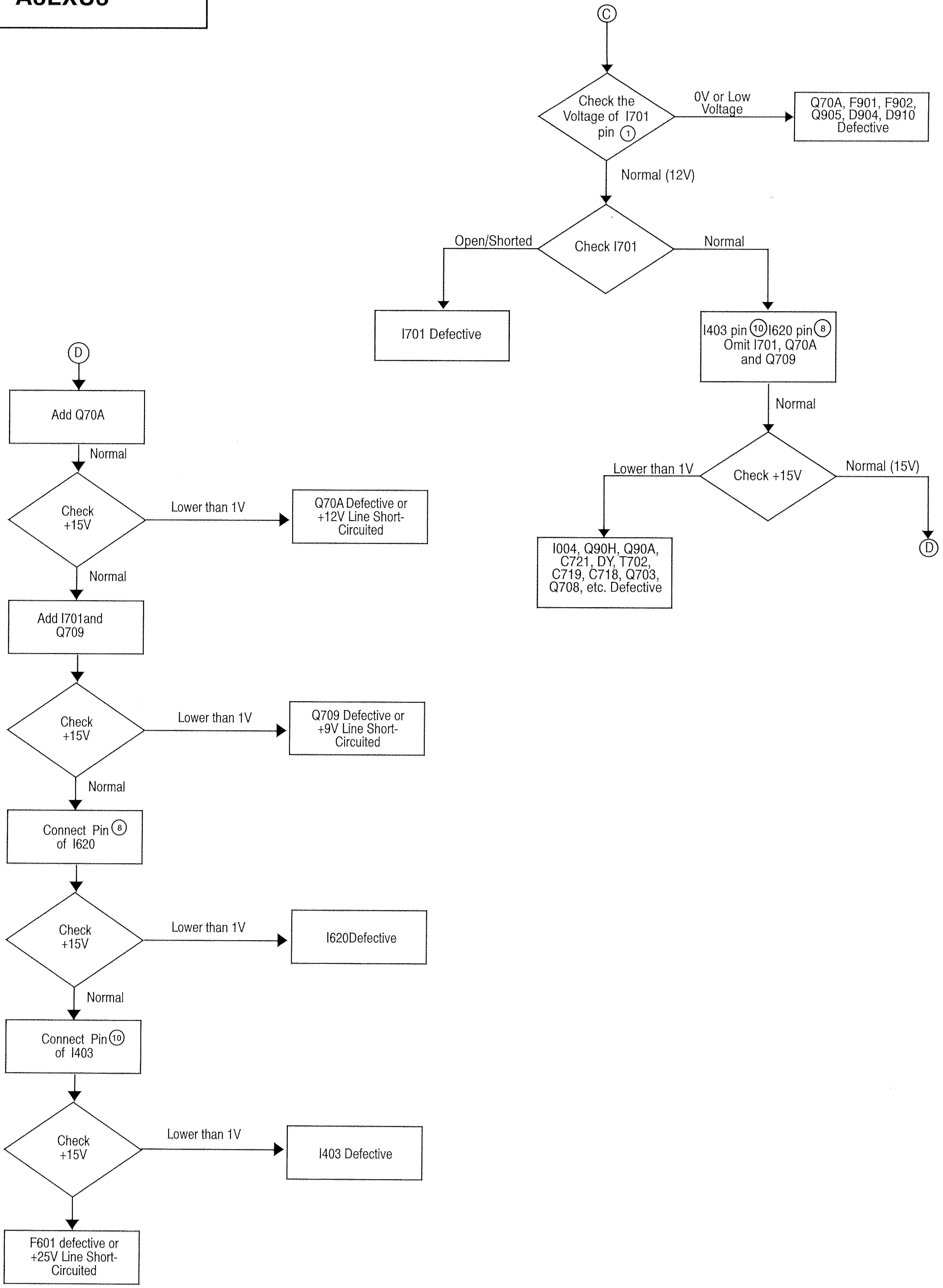
1. When any parts become abnormally hot or there is a smell of burning, cut OFF the power immediately.
2. Do not make shorts between circuits or across terminals except for those specified.
3. When applying a signal for checking purposes, make connection in the alternate current system for any not specified.
4. When measuring the voltages of ICs and TRs, be careful to see that the lead bar of the tester does not touch any other terminal.
5. Measure the voltage correctly.
6. Measure the resistance over a small range.
7. Be sure to switch OFF the power when replacing parts.
8. Do not apply a soldering iron for a long time when replacing parts. (Use a solder-wick.)
9. Use an isolation transformer when troubleshooting.

1. NO RASTER AND SOUND


Check the Voltage +15V
Lower than 1V
A
Normal (15V)
Check the Voltage +B
Normal (130 VDC) or High Voltage
B
Lower than 1V or 0V
Check the Voltage Between Both Ends of C905
0V
Normal
Check Q005
Open
Q005 Defective
Normal
Check the Voltage Between D920 Anode and Cathode
0V
Normal (12V - 14V)
D920 Defective
I001 Defective
Check Q901
Open
Normal
Replace Q901
OK
I901 Defective
Open/Short
Q901 Defective


A
Open R90H and Check +15V
Lower than 1V
C
Normal (15V)
Check D903
Short-Circuited
D903 Defective
Normal
Q702, D716, D718, T702 Defective


B
Check the Voltage of I201 Pin ㉚
0V or Low Voltage
Q90A, Q90H, D915, D916 Defective
Normal (9V)
Check the Waveform of I201 Pin ㉓
No Switching
I201 Defective
Normal
D713, D741, D744, T701, Q701, Q702 Defective


C
Check the Voltage of I701 pin ①
0V or Low Voltage
Q70A, F901, F902, Q905, D904, D910 Defective
Normal (12V)
Check I701
Open/Shorted
I701 Defective
Normal
I403 pin ⑩ I620 pin ⑧ Omit I701, Q70A and Q709
Normal
Check +15V
Lower than 1V
I004, Q90H, Q90A, C721, DY, T702, C719, C718, Q703, Q708, etc. Defective
Normal (15V)
D
D
Add Q70A
Normal
Check +15V
Lower than 1V
Q70A Defective or +12V Line Short-Circuited
Normal
Add I701and Q709
Check +15V
Lower than 1V
Q709 Defective or +9V Line Short-Circuited
Normal
Connect Pin ⑧ of I620
Check +15V
Lower than 1V
I620Defective
Normal
Connect Pin ⑩ of I403
Check +15V
Lower than 1V
I403 Defective
F601 defective or +25V Line Short-Circuited

REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS

Capacitors:
CD: Ceramic Disc
PF: Polyester Film
EL: Electrolytic
PP: Polypropylene
PR: Paper
TA: Tantalum
TM: Trimmer

Resistors:
CF: Carbon Film
CC: Carbon Composition
MF: Metal Oxide Film
VR: Variable Resistor
WW: Wire Wound
FR: Fuse Resistor
MG: Metal Glaze

Semiconductors:
TR: Transistor
DI: Diode
ZD: Zener Diode
VA Varistor
TH: Thermistor
IC: Integrated Circuit

SYMBOL NO.	PART NO.	PART DESCRIPTION
		MAIN CHASSIS ASSEMBLY PARTS
		MAIN PWB CAPACITORS
C001	0890087R	CD 1000PF-K 50V
C002	0800047R	EL 100UF-M 6.3V
C003	0800072R	EL 470UF-M 6.3V
C004	0244141R	CD 0.01UF-KB B 50V
C005	0890121R	CD 33PF-J CH 50V
C006	0890121R	CD 33PF-J CH 50V
C007	0800003R	EL 1.0UF-M 50V
C008	0276717R	PP 0.1UF-J 50V (TF TYP E)
C00E	0800009R	EL 4.7UF-M 25V
C010	0800009R	EL 4.7UF-M 25V
C011	0800049R	EL 100UF-M 16V
C012	0800009R	EL 4.7UF-M 25V
C013	0800015R	EL 10UF-M 16V
C014	0800015R	EL 10UF-M 16V
C015	0800009R	EL 4.7UF-M 25V
C016	0800009R	EL 4.7UF-M 25V
C017	0800009R	EL 4.7UF-M 25V
C018	0880051R	PF 0.033UF-KEB 50V
C019	0890086R	CD 820PF-K 50V
C01A	0880048R	PF 0.022UF-KEB 50V
C01E	0800074N	EL 470UF-M 16V
C01H	0800015R	EL 10UF-M 16V
C022	0880048R	PF 0.022UF-KEB 50V
C023	0880044R	PF 0.01UF-KEB 50V
C024	0890087R	CD 1000PF-K 50V
C025	0800009R	EL 4.7UF-M 25V
C030	0244105R	CD 2200PF-K 50V TAPE
C031	0276717R	PP 0.1UF-J 50V (TF TYP E)
C032	0890078R	CD 220PF-K 50V
C090	0890087R	CD 1000PF-K 50V
C091	0800015R	EL 1.0UF-M 50V
C091	0284623R	BIPOLAR 1.0UF- 50V (Upgrade)
C092	0880048R	PF 0.022UF-KEB 50V
C093	0800005R	EL 2.2UF-M 50V
C094	0800047R	EL 100UF-M 6.3V
C095	0890121R	CD 33PF-J CH 50V
C096	0890121R	CD 33PF-J CH 50V
C101	0800047R	EL 100UF-M 6.3V
C102	0244105R	CD 2200PF-K 50V TAPE
C103	0244141R	CD 0.01UF-KB B 50V
C104	0800082F	EL1000UF-M 16V
C105	0244141R	CD 0.01UF-KB B 50V
C106	0244105R	CD 2200PF-K 50V TAPE
C107	0890063R	CD 15PF-J 50V
C108	0244105R	CD 2200PF-K 50V TAPE
C109	0244105R	CD 2200PF-K 50V TAPE
C110	0890072R	CD 68PF-J 50V
C111	0890072R	CD 68PF-J 50V
C112	0890072R	CD 68PF-J 50V
C201	0800015R	EL 10UF-M 16V
C202	0800082F	EL 1000UF-M 16V
C203	0244105R	CD 2200PF-K 50V TAPE
C204	0880044R	PF 0.01UF-KEB 50V
C205	0880053R	PF 0.047UF-KEB 50V
C206	0890087R	CD 1000PF-K 50V
C208	0880055R	PF 0.068UF-KEB 50V
C20A	0246464R	CD 100PF-J CH 50V TAPE
C20C	0890118R	CD 22PF-J CH 50V
C20E	0246463R	CD 91PF-J CH 50V
C20F	0880044R	PF 0.01UF-KEB 50V
C20H	0800001R	EL 0.47UF-M 50V (SME)
C20K	0890063R	CD 15PF-J 50V
C210	0890121R	CD 33PF-J CH 50V
C211	0890121R	CD 33PF-J CH 50V
C212	0244105R	CD 2200PF-K 50V TAPE
C213	0890089R	CD 1500PF-K 50V
C214	0880053R	PF 0.047UF-KEB 50V
C215	0800041R	EL 47UF-M 16V
C217	0890118R	CD 22PF-J CH 50V
C301	0800003R	EL 1.0UF-M 50V
C302	0800005R	EL 2.2UF-M 50V
C303	0800015R	EL 10UF-M 16V
C304	0800003R	EL 1.0UF-M 50V
C305	0244141R	CD 0.01UF-KB B 50V
C307	0800005R	EL 2.2UF-M 50V
C309	0800009R	EL 4.7UF-M 25V
C30A	0890073R	CD 82PF-J 50V
C30C	0890061R	CD 10PF- 50V
C30E	0244141R	CD 0.01UF-KB B 50V
C30K	0800015R	EL 10UF-M 16V
C310	0880044R	PF 0.01UF-KEB 50V
C311	0890073R	CD 82PF-J 50V
C313	0880044R	PF 0.01UF-KEB 50V
C314	0880044R	PF 0.01UF-KEB 50V
C315	0800049R	EL 100UF-M 16V
C316	0800009R	EL 4.7UF-M 25V
C317	0800049R	EL 100UF-M 16V
C318	0800015R	EL 10UF-M 16V
C319	0880044R	PF 0.01UF-KEB 50V
C31A	0800015R	EL 10UF-M 16V
C31C	0880044R	PF 0.01UF-KEB 50V
C31E	0244141R	CD 0.01UF-KB B 50V
C31H	0800015R	EL 10UF-M 16V
C31K	0880044R	PF 0.01UF-KEB 50V
C322	0800049R	EL 100UF-M 16V
C325	0800015R	EL 10UF-M 16V
C326	0800009R	EL 4.7UF-M 25V
C327	0800049R	EL 100UF-M 16V
C330	0800042R	EL 47UF-M 25V
C332	0244141R	CD 0.01UF-KB B 50V
C390	0890063R	CD 15PF-J 50V
C391	0880044R	PF 0.01UF-KEB 50V

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
C392	0890078R	CD 220PF-K 50V
C399	0244141R	CD 0.01UF-KB B 50V
C401	0800049R	EL 100UF-M 16V
C402	0800015R	EL 10UF-M 16V
C403	0800015R	EL 10UF-M 16V
C404	0800049R	EL 100UF-M 16V
C405	0880044R	PF 0.01UF-KEB 50V
C406	0800009R	EL 4.7UF-M 25V
C407	0800009R	EL 4.7UF-M 25V
C408	0800039R	EL 47UF-M 10V
C409	0276717R	PP 0.1UF-J 50V (TF TYP E)
C40A	0292712F	TA 3.3UF-K16V
C40C	0292714F	TA 10UF-K16V
C40E	0800001R	EL 0.47UF-M 0V (SME)
C40H	0800015R	EL 10UF-M 16V
C40K	0800001R	EL 0.47UF-M 50V (SME)
C410	0800009R	EL 4.7UF-M 25V
C411	0800001R	EL 0.47UF-M 50V (SME)
C412	0244141R	CD 0.01UF-KB B 50V
C413	0800009R	EL 4.7UF-M 25V
C414	0800001R	EL 0.47UF-M 50V (SME)
C415	0800001R	EL 0.47UF-M 50V (SME)
C416	0800001R	EL 0.47UF-M 50V (SME)
C417	0800001R	EL 0.47UF-M 50V (SME)
C418	0800007R	EL 3.3UF-M 50V
C419	0800049R	EL 100UF-M 16V
C41C	0244105R	CD 2200PF-K 50V TAPE
C41E	0880048R	PF 0.022UF-KEB 50V
C41H	0276717R	PP 0.1UF-J 50V (TF TYP E)
C41K	0880048R	PF 0.022UF-KEB 50V
C420	0800003R	EL 1.0UF-M 50V
C421	0244111R	CD 6800PF-K 50V TAPE
C422	0276719R	PF 0.15UF-J 50V
C423	0800015R	EL 10UF-M 16V
C424	0800015R	EL 10UF-M 16V
C425	0890087R	CD 1000PF-K 50V
C426	0880056R	PF 0.082UF-KEB 50V
C427	0248700R	CD 680PF-J SL 50V
C428	0800023R	EL 22UF-M 16V
C429	0244111R	CD 6800PF-K 50V TAPE
C42A	0276719R	PF 0.15UF-J 50V
C42C	0276717R	PP 0.1UF-J 50V (TF TYP E)
C42E	0276717R	PP 0.1UF-J 50V (TF TYP E)
C42H	0276717R	PP 0.1UF-J 50V (TF TYP E)
C42K	0276717R	PP 0.1UF-J 50V (TF TYP E)
C430	0800001R	EL 0.47UF-M 50V (SME)
C431	0800001R	EL 0.47UF-M 50V (SME)
C432	0800016R	EL 10UF-M 25V
C433	0800047R	EL 100UF-M 6.3V
C434	0244105R	CD 2200PF-K 50V TAPE
C435	0800059R	EL 220UF-M 25V
C436	0244105R	CD 2200PF-K 50V TAPE
C437	0800059R	EL 220UF-M 25V
C438	0800047R	EL 100UF-M 6.3V
C439	0276717R	PP 0.1UF-J 50V (TF TYP E)
C43A	0800083F	EL 1000UF-M 25V
C43C	0800082F	EL 1000UF-M 16V
C43E	0800041R	EL 47UF-M 16V
C43H	0276717R	PP 0.1UF-J 50V (TF TYP E)
C43K	0800082F	EL 1000UF-M 16V
C440	0800059R	EL 220UF-M 25V
C441	0800015R	EL 10UF-M 16V
C442	0800023R	EL 22UF-M 16V
C443	0800023R	EL 22UF-M 16V
C444	0800042R	EL 47UF-M 25V
C445	0800042R	EL 47UF-M 25V
C450	0800009R	EL 4.7UF-M 25V
C451	0800009R	EL 4.7UF-M 25V
C453	0800009R	EL 4.7UF-M 25V
C454	0800009R	EL 4.7UF-M 25V
C455	0800009R	EL 4.7UF-M 25V
C456	0800009R	EL 4.7UF-M 25V
C457	0800009R	EL 4.7UF-M 25V
C458	0800009R	EL 4.7UF-M 25V
C470	0800015R	EL 10UF-M 16V
C471	0800049R	EL 100UF-M 16V
C501	0246445R	CD 16PF-J CH 50V
C502	0244141R	CD 0.01UF-KB B 50V
C503	0800001R	EL 0.47UF-M 50V (SME)
C504	0800082F	EL 1000UF-M 16V
C507	0800074N	EL 470UF-M 16V
C510	0880044R	PF 0.01UF-KEB 50V
C601	0800003R	EL 1.0UF-M 50V
C602	0890089R	CD 1500PF-K 50V
C603	0880046R	PF 0.015UF-K 50V
C604	0800048R	EL 100UF-M 10V
C605	0800003R	EL 1.0UF-M 50V
C606	0890087R	CD 1000PF-K 50V
C607	0244107R	CD 3300PF-K 50V TAPE
C608	0800003R	EL 1.0UF-M 50V
C609	0800015R	EL 10UF-M 16V
C60F	0890082R	CD 390PF-K 50V
C620	0800057R	EL 220UF-M 10V
C621	0880042R	PF 0.0068UF-KEB 50V
C622	0292716R	TA 1.0UF-K 20V
C623	0248696R	CD 330PF-J SL 50V TAPE
C624	0800061N	EL 220UF-M 35V
C625	0800007R	EL 3.3UF-M 50V
C626	0276717R	PP 0.1UF-J 50V (TF TYP E)
C627	0800007R	EL 3.3UF-M 50V
C628	0800003R	EL 1.0UF-M 50V
C629	0800084F	EL 1000UF-M 35V (35V)
C629	0800083F	EL 1000UF-M 25V (32V)
C62A	0800056R	EL 220UF-M 6.3V
C62H	0276717R	PP 0.1UF-J 50V (TF TYP E)
C630	0890087R	CD 1000PF-K 50V
C701	0890087R	CD 1000PF-K 50V
⚠C702	0800003R	EL 1.0UF-M 50V
C703	0800003R	EL 1.0UF-M 50V
C704	0880051R	PF 0.033UF-KEB 50V
C705	0890087R	CD 1000PF-K 50V
C706	0244141R	CD 0.01UF-KB B 50V
C707	0800049R	EL 100UF-M 16V
C708	0800001R	EL 0.47UF-M 50V (SME)
C714	0880044R	PF 0.01UF-KEB 50V
C715	0247842R	CD 33PF-SL 500V
C716	0880019R	PF 0.33UF-KB 50V
⚠C718	0244729	CD 2200PF 2KV
⚠C719	0244728	CD 1800PF 2KV
⚠C71A	0244212	CD 1200PF-K 2KV (35V)
⚠C71A	0244211	CD 1000PF-K 2KV (32V)
C71C	0244105R	CD 2200PF-K 50V TAPE
C71F	0243506R	CD 270PF-K 500V
⚠C71H	0244725	CD 1000PF-K 2.0KV B (35V)
C720	0244501R	CD 1000PF-K 500V
⚠C721	0262429F	CAP.-POLYPRO. 12000PF-J 1800V

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
⚠C722	0299707F	CAP.-POLYESTOR 0.015UF-K 630V
⚠C723	0263001	EL 3.3UF-M 100V
⚠C724	0299931F	CAP.-POLYPRO. 0.27UF-K 200V
⚠C725	0800003R	EL 1.0UF-M 50V
⚠C726	0299932F	CAP.-POLYPRO. 0.33UF-K 200V (35V)
⚠C726	0299931F	CAP.-POLYPRO. 0.27UF-K 200V (32V)
C72A	0244501R	CD 1000PF-K 500V
C72C	0800073R	EL 470UF-M 10V
C72H	0800048R	EL 100UF-M 10V
C730	0800084F	EL 1000UF-M 35V
C732	0800083F	EL 1000UF-M 25V
C733	0800056R	EL 220UF-M 6.3V
C736	0244501R	CD 1000PF-K 500V
⚠C737	0800019R	EL 10UF-M 63V
C738	0253974F	EL 33UF 250V CE04W2E33 (35V)
C738	0255524F	EL 4.7MF-M 250V (KME) (32V)
C73A	0800041R	EL 47UF-M 16V
C73C	0890086R	CD 820PF-K 50V
C73H	0890087R	CD 1000PF-K 50V
C742	0254823G	EL 100UF-M 160V
C747	0276717R	PP .1UF-J 50V (TF TYP E)
C74A	0258130F	EL 330MF-M 100V(KME) (35V)
C74H	0243508R	CD 390PF-K 500V (35V)
C755	0880035R	PP 2200PF-50V
C756	0800015R	EL 10UF-M 16V
C757	0800015R	EL 10UF-M 16V
⚠C901	0279697	PF 0.1MF-M 250V
⚠C902	0248593F	CD 4700PF-Z 250V
⚠C903	0248593F	CD 4700PF-Z 250V
⚠C904	0244505F	CD 0.0022MF-K 500V
⚠C905	0253891	EL 470UF 200V HR
C906	0253957F	EL 22UF-M 160V
C907	0800064R	EL 330UF-M 6.3V
C908	0800003R	EL 1.0UF-M 50V
C909	0800001R	EL 0.47UF-M 50V (SME)
⚠C90A	0248593F	CD 4700PF-Z 250V
C90C	0880044R	PF 0.01UF-KEB 50V
C90E	0880031R	PP1000PF-K 50V
C90F	0880044R	PF 0.01UF-KEB 50V
C90H	0284891F	EL 150UF 200V
C90K	0880066F	PF 0.47 50V
C910	0880044R	PF 0.01UF-KEB 50V
C911	0890081R	CD 330PF 50V
C912	0258192F	EL 2200UF 25V
C913	0890087R	CD 1000PF-K 50V
C914	0800024R	EL 22UF-M 25V
C915	0800015R	EL 10UF-M 16V
C917	0245612F	CD 4700PF-KF B 1KV
C919	0245608F	CD 1000PF-K B 1000V
C91C	0890082R	CD 390PF-K 50V
C91H	0800061N	EL 220UF-M 35V
C91K	0276717R	PP 0.1UF-J 50V (TF TYP E)
⚠C920	0279697	PF 0.1MF-M 250V
⚠C969	0248593	CD 4700PF-Z 250V
CA01	0800047R	EL 100UF-M 6.3V (35V)
CAZ1	0890084R	CD 560PF-K 50V
CAZ2	0800015R	EL 10UF-M 16V
		CPT PWB CAPACITORS
C320	0800015R	EL 10UF-M 16V
C321	0244141R	CD 0.01UF-KB B 50V
C630	0880053R	PF 0.047UF-KEB 50V
C631	0800041R	EL 47UF-M 16V
C632	0880042R	PF 0.0068UF-KEB50V (35V)
C632	0880039R	PF 0.0047UF-KEB50V (32V)
C633	0800005R	EL 2.2UF-M 50V
C634	0800003R	EL 1.0UF-M 50V
C636	0800005R	EL 2.2UF-M 50V
C637	0800018R	EL 10UF-M 50V
C735	0800007R	EL 3.3UF-M 50V (35V)
C735	0800005R	EL 2.2UF-M 50V (32V)
C750	0800005R	EL 2.2UF-M 50V
C751	0800044R	EL 47UF-M 50V
C752	0284623R	EL 1UF-SME(BP) 50V
C851	0800049R	EL 100UF-M 16V
C852	0890087R	CD 1000PF-K 50V
C853	0255524F	EL 4.7MF-M 250V (KME)
C856	0244729F	CD 2200PF 2KV
C860	0890087R	CD 1000PF-K 50V
C861	0890087R	CD 1000PF-K 50V
C862	0890087R	CD 1000PF-K 50V
C864	0890077R	CD 180PF-K 50V
C865	0890082R	CD 390PF-K 50V (35V)
C865	0890079R	CD 270PF-K 50V (32V)
C866	0890077R	CD 180PF-K 50V (35V)
C866	0890079R	CD 270PF-K 50V (32V)
C870	0890079R	CD 270PF-K 50V (35V)
C870	0890077R	CD 180PF-K 50V (32V)
C872	0890074R	CD 100PF-J 50V
C873	0890074R	CD 100PF-J 50V
C874	0890074R	CD 100PF-J 50V
C875	0890074R	CD 100PF-J 50V (35V)
C875	0890079R	CD 270PF-K 50V (32V)
C887	0890084R	CD 560PF-K 50V (35V)
C887	0890078R	CD 220PF-K 50V (32V)
C888	0890087R	CD 1000PF-K 50V
C889	0244171R	CD 0.01UF-Z F 50V TAPE
		PINP PWB CAPACITORS
CA01	0890086R	CD 820PF-K 50V
CA02	0880044R	PF 0.01UF-KEB 50V
CA03	0880044R	PF 0.01UF-KEB 50V
CA04	0800049R	EL 100UF-M 16V
CA05	0880044R	PF 0.01UF-KEB 50V
CA07	0880044R	PF 0.01UF-KEB 50V
CA08	0800049R	EL 100UF-M 16V
CA09	0880044R	PF 0.01UF-KEB 50V
CA10	0880044R	PF 0.01UF-KEB 50V
CA11	0800041R	EL 47UF-M 16V
CA12	0800049R	EL 100UF-M 16V
CA13	0880044R	PF 0.01UF-KEB 50V
CA14	0890078R	CD 220PF-K 50V
CA15	0880044R	PF 0.01UF-KEB 50V
CA16	0800015R	EL 10UF-M 16V
CA17	0800001R	EL 0.47UF-M 50V (SME)
CA18	0246445R	CD 16PF-J CH 50V
CA19	0890085R	CD 680PF-K 50V
CA20	0800001R	EL 0.47UF-M 50V (SME)
CA21	0880044R	PF 0.01UF-KEB 50V
CA22	0890078R	CD 220PF-K 50V
CA25	0800003R	EL 1.0UF-M 50V
CA26	0880044R	PF 0.01UF-KEB 50V

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
CA27	0800005R	EL 2.2UF-M 50V
CA28	0880044R	PF 0.01UF-KEB 50V
CA29	0880044R	PF 0.01UF-KEB 50V
CA32	0800015R	EL 10UF-M 16V
CA35	0800058R	EL 220UF-M 16V
CA37	0880057R	PF 0.1UF-KEB 50V
CA38	0880044R	PF 0.01UF-KEB 50V
CA40	0800049R	EL 100UF-M 16V
CA41	0880044R	PF 0.01UF-KEB 50V
CA42	0800049R	EL 100UF-M 16V
CA43	0880044R	PF 0.01UF-KEB 50V
CA44	0800041R	EL 47UF-M 16V
CA48	0880044R	PF 0.01UF-KEB 50V
CA49	0880044R	PF 0.01UF-KEB 50V
CA54	0880044R	PF 0.01UF-KEB 50V
CA55	0800049R	EL 100UF-M 16V
CA60	0800015R	EL 10UF-M 16V
CA61	0800007R	EL 3.3UF-M 50V
CA62	0890085R	CD 680PF-K 50V
CA63	0890089R	CD 1500PF-K 50V
CA66	0890066R	CD 27PF-J 50V
CA67	0800015R	EL 10UF-M 16V
CA68	0880044R	PF 0.01UF-KEB 50V
CA69	0800003R	EL 1.0UF-M 50V
CA70	0880057R	PF 0.1UF-KEB 50V
CA71	0880057R	PF 0.1UF-KEB 50V
CA72	0890087R	CD 1000PF-K 50V
CE20	0800015R	EL 10UF-M 16V
CE21	0880044R	PF 0.01UF-KEB 50V
CE22	0800015R	EL 10UF-M 16V
CE25	0244105R	CD 2200PF-K 50V TAPE
		35V MAGNETIC FIELD PWB CAPACITORS
CMF1	0800015R	EL 10UF-M 16V (35V)
CMF2	0800049R	EL 100UF-M 16V (35V)
CMF3	0284623R	EL 1UF-SME(BP) 50V (35V)
CY01	0890083R	CD 470PF-K 50V (35V)
CY02	0890083R	CD 470PF-K 50V (35V)
CY03	0880044R	PF 0.01UF-KEB 50V (35V)
CY04	0800015R	EL 10UF-M 16V (35V)
CY05	0276717R	PP 0.1UF-J 50V (TF TYP E) (35V)
CY06	0890076R	CD 150PF-K 50V (35V)
CY07	0800049R	EL 100UF-M 16V (35V)
CY08	0880044R	PF 0.01UF-KEB 50V (35V)
		MAIN PWB DIODES
D001	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D003	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D004	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D005	2339833M	ZD HZS5A3 TA SI 200MA
D006	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D007	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D009	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D00A	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D00C	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D00E	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D00H	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D00K	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D010	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D011	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D012	2339889M	ZD HZS12 (C3) 0.005A
D013	2339889M	ZD HZS12 (C3) 0.005A
D014	2339889M	ZD HZS12 (C3) 0.005A
D016	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D017	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D020	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D022	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D023	2339862M	ZD HZS-9A2 TA
D024	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D101	2339971M	ZD HZS33-1 TA
D301	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D302	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D303	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D304	2339889M	ZD HZS12 (C3) 0.005A
D305	2339862M	ZD HZS-9A2 TA
D306	2339862M	ZD HZS-9A2 TA
D307	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D308	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D390	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D391	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D401	2339812M	ZD HZS3A2 TA (SI.200MA)
D402	2339812M	ZD HZS3A2 TA (SI.200MA)
D403	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D404	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D405	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D406	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D407	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D410	2339889M	ZD HZS12 (C3) 0.005A (35V)
D501	2339889M	ZD HZS12 (C3) 0.005A
D502	2339889M	ZD HZS12 (C3) 0.005A
D503	2339889M	ZD HZS12 (C3) 0.005A
D601	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D602	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D605	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D620	2339862M	ZD HZS-9A2 TA
D621	2339491M	DI AM01Z (200 TAPE) 1A
D622	2339491M	DI AM01Z (200 TAPE) 1A
D623	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D701	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D703	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D704	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D705	CH00031M	DI AU02V1 (280V)
⚠D707	2339242M	ZD HZS33L2 TAPE
⚠D708	2339223M	ZD HZS27 (3L)
D712	2339251M	ZD HZS36-1L TAPE
D713	2339491M	DI AM01Z (200 TAPE) 1A
D714	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D715	2338944	DI FML-G12S (F) (200V) SI 0.04US (35V)
⚠D716	2348511	DI RS3FS
⚠D717	2348511	DI RS3FS (35V)
⚠D718	2336612M	DI RU3AM TA
D71A	2339481M	DI AS01Z (200 TAPE) SI 0.6A
D72A	2331809M	ZD DI HZ-6 TAPE (C3) SI 500MW
D72H	2331812M	ZD DI HZ-7 TAPE (A2) SI 500MW
D73A	2339851M	ZD HZS7A1 TAPE (SI.200MA)
⚠D73C	2339481M	DI AS01Z (200 TAPE) SI 0.6A
D73F	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D73H	CH00031M	DI AU02V1(280V)
D740	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D741	2339491M	DI AM01Z (200 TAPE) 1A
D742	2339851M	ZD HZS7A1 TAPE (SI.200MA)
D743	2339834M	ZD HZS5(B1) TAPE

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
D744	2339882M	ZD DI HZS-12(A2) TAPE			**35V CONTROL PWB DIODES**
D745	2339491M	DI AM01Z (200 TAPE) 1A (35V)			
D750	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	ZD0501	2339885M	ZD HZS12B2 TA (35V)
D781	2339822M	ZD HZS4A2 TA	ZD0502	2339885M	ZD HZS12B2 TA (35V)
⚠D901	2342062	DI D3SBA60-4103	ZD3801	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA (35V)
D902	2339491M	DI AM01Z (200 TAPE) 1A	ZD3802	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA (35V)
D903	2339491M	DI AM01Z (200 TAPE) 1A			
D904	2331991M	DI R02A (V) SI 1.2A 6			**MAIN PWB FUSES**
D905	2339481M	DI AS01Z (200 TAPE) SI 0.6A			
D906	2339876M	ZD HZS11B3 TA	⚠F601	2722382	FUSE-DC0.75A-J/UL(L)
D907	2339481M	DI AS01Z (200 TAPE) SI 0.6A	⚠F901	2722358	FUSE AC05A
D908	2339481M	DI AS01Z (200 TAPE) SI 0.6A	⚠F902	2722353	FUSE AC1.6A
D909	2339812M	ZD HZS3A2 TA (SI.200MA)			
⚠D90A	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			**MAIN PWB SURGE PROTECTOR**
D90C	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
D90E	2339835M	ZD HZS5B2 TAPE	⚠G901	2340741	SURGE PROTECTOR DSP-301N-S00B
D90F	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
D90H	2339835M	ZD HZS5B2 TAPE			**CPT PWB SPARK GAP**
D90K	2339833M	ZD HZS5A3 TA SI 200MA			
D910	2338944	DI FML-G12S (F) (200V) SI 0.04US	G851	2340037	SPARK GAP
D912	2339481M	DI AS01Z (200 TAPE) SI 0.6A	G854	2340039	SPARK GAP (35V)
D913	2339835M	ZD HZS5B2 TAPE	G855	2340039	SPARK GAP (35V)
D914	2339491M	DI AM01Z (200 TAPE) 1A	G856	2340039	SPARK GAP (35V)
D915	2339848M	ZD HZS-6-C2 TAPE			
D916	2339848M	ZD HZS-6-C2 TAPE			
D917	2339491M	DI AM01Z (200 TAPE) 1A			**MAIN PWB FILTERS**
D920	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
D921	2339191M	ZD HZS20-1L TAPE	H301	2151041	DELAY LINE AND BAND PASS FILTER
			⚠H901	2793313	CP-EXN-G131P365L
		CPT PWB DIODES			
					PINP PWB FILTERS
D626	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
D627	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	HA02	2791754	FX-DSS306B101M
D628	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	HA03	2791754	FX-DSS306B101M
D719	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	HA07	2791759	FX-DSS306B102M
D720	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	HA08	2791759	FX-DSS306B102M
D721	2335991M	ZD HZ-T33 (02 TP)	HA09	2791762	FX-DSS306FZ103M
D722	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	HA10	2791762	FX-DSS306FZ103M
D801	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
D802	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			**MAIN PWB INTEGRATED CIRCUITS**
D803	2331781M	ZD HZ-4 TAPE (A1) SI 500MW			
D810	2339601M	ZD HZS-2 TAPE (ALL) SI 400MW	I001	CP03141	IC LC864164B-5A78
D811	2339601M	ZD HZS-2 TAPE (ALL) SI 400MW	I001	CP03142	IC LC864164B (UPGRADE)
D812	2339601M	ZD HZS-2 TAPE (ALL) SI 400MW	I002	2381111	IC M6M80021L
D821	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	I003	2917391	IC MSC11371RS
D822	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	I004	2020461	IC AN78L05
D823	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	⚠I201	2004133	IC LA7674
			I301	2003981	IC BA7604N
		PINP PWB DIODES	I302	CZ00081	IC LA7952-ANALOG MONOLITHIC
			I401	2004592	IC AN5817K
DA01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	I402	CK00121	IC UPC1892-SURROUND
DA02	2339867M	ZD HZS-9-C1 TAPE (SI.200MA)	⚠I403	2004341	IC AN7178
DA03	2339867M	ZD HZS-9-C1 TAPE (SI.200MA)	I404	2366301	IC UPD4052BC
DA04	2339867M	ZD HZS-9-C1 TAPE (SI.200MA)	⚠I620	2003541	IC LA7838
DA05	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	I701	2003423	IC UPC7893AHF-ICL
DA06	2339867M	ZD HZS-9-C1 TAPE (SI.200MA)	⚠I901	2912177	IC STR30130
DA07	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	⚠I902	2000521	IC PC713F6
DA08	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	⚠I903	2000465	IC PS2501-1(KC/LC)
DA09	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	⚠I904	2000465	IC PS2501-1(KC/LC)
DA10	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
DA11	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
DE20	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
		CPT PWB INTEGRATED CIRCUITS
I621	2362601	IC HA17458PS
⚠I720	2000521	IC PC713F6
		PINP PWB INTEGRATED CIRCUITS
IA01	2020341	IC MM1111XS
IA02	CP00841	IC M52694P-ANALOG MONOLITHIC
IA03	CP00831	IC M65607SP-DIGITAL MONOLITHIC
IA04	CP00851	IC HM53461-10-DIGITAL MONOLITHIC
IA05	2366361	IC.AN7805
I05	CP01771	IC M52684AP-ANALOG MONOLITHIC
		35V MAG. FIELD PWB INTEGRATED CIRCUITS
IY01	2381211	IC M51494L (35V)
		MAIN PWB INDUCTORS/COILS
L001	2122253M	COIL-AXIAL 100UH-K
L003	2122942M	COIL-AXIAL 8.2UHKM BELTING
L004	2122942M	COIL-AXIAL 8.2UHKM BELTING
L005	2122942M	COIL-AXIAL 8.2UHKM BELTING
L006	2122942M	COIL-AXIAL 8.2UHKM BELTING
L008	2120482	FILTER COIL 100 UHK
L010	BH00101	OSC COIL
L101	2122253M	COIL-AXIAL 100UH-K
L102	2122253M	COIL-AXIAL 100UH-K
L103	2122927M	COIL-AXIAL 0.68UH-M
L201	2122253M	COIL-AXIAL 100UH-K
L202	2145982	COIL-DISCRI 4.7MHZ
L203	2143672	IF COIL WITH 7 CASE 1:3 INCORE
L204	2143678	IF COIL WITH 7 CASE 10T
L205	2142445	COIL-AFC
L206	2122949M	COIL-AXIAL 33UHKM BELTING
L207	2122944M	COIL-AXIAL 12UHKM BELTING
L208	2122952M	COIL-AXIAL 47UHKM BELTING
L301	2122253M	COIL-AXIAL 100UH-K
L302	2145891	1H DELAY LINE
L303	2122939M	COIL-AXIAL 5.6UHKM BELTING
L304	2122943M	COIL-AXIAL 10UHKM BELTING
L305	2122943M	COIL-AXIAL 10UHKM BELTING (35V)
L305	2122947M	COIL-AXIAL 22UHKM BELTING
L308	2122951M	COIL-AXIAL 39UHKM BELTING
L309	2122956M	COIL-AXIAL 100UHKM BELTING
L311	2122253M	COIL-AXIAL 100UH-K
L601	2122956M	COIL-AXIAL 100UHKM BELTING
L602	BH00204R	FILTER COIL 18UH (35V)
L700	2122938M	COIL-AXIAL 4.7UHKM BELTING
L701	2122652M	FERRITE CORE
L702	2124513	COIL-H.LINEARITY M1LXU1
L703	2771893	FERITE BEADS CORE (005)
⚠L704	2275381	COIL-CHOKING 1000UH
L705	2122253M	COIL-AXIAL 100UH-K (35V)
L705	2122248M	COIL-AXIAL 47UH-K (32V)
L709	BH00206R	FILTER COIL 27UH (35V)
L709	BH00205R	FILTER COIL 22UH (32V)
⚠L710	2122244M	COIL-AXIAL 22UH-K
L711	2122652M	FERRITE CORE
L71A	2122652M	FERRITE CORE
⚠L901	2272293	LINE FILTER-LL
⚠L902	2121676	LINE FILTER
L905	2122652M	FERRITE CORE
L906	2122652M	FERRITE CORE
L907	2122652M	FERRITE CORE
L908	2122652M	FERRITE CORE
L909	BH00204R	FILTER COIL18UH
L90A	2122263M	LA AXIAL COIL 561
L920	2122653M	FERRITE CORE 1.65UH TAPE
L922	BH00209R	FILTER COIL 47UH
LA01	2122253M	COIL-AXIAL 100UH-K (35V)
		CPT PWB INDUCTORS/COILS
L850	2120482	FILTER COIL 100 UHK
L851	2122945M	COIL-AXIAL 15UHKM BELTING
L852	2122945M	COIL-AXIAL 15UHKM BELTING
L853	2122945M	COIL-AXIAL 15UHKM BELTING
L854	2122956M	COIL-AXIAL 100UHKM BELTING
L855	2122956M	COIL-AXIAL 100UHKM BELTING
L856	2122956M	COIL-AXIAL 100UHKM BELTING
L861	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L862	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L863	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L864	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L865	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L866	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L867	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L868	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L869	2123468M	FERRITE BEADS CORE LEAD 0.8MH
L871	2123468M	FERRITE BEADS CORE LEAD 0.8MH
		PINP PWB INDUCTORS/COILS
LA01	2123781R	FILTER COIL101K
LA02	2123781R	FILTER COIL101K
LA03	2122253M	COIL-AXIAL100UH-K
LA04	2123781R	FILTER COIL101K
LA07	2122934M	COIL-AXIAL 2.2UH-M
LA09	2122934M	COIL-AXIAL 2.2UH-M
		35V MAG. FIELD PWB INDUCTORS/COILS
LY01	2122253M	COIL-AXIAL 100UH-K (35V)
		MAIN PWB TRANSISTORS
Q002	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q003	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q004	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q005	2320663M	TRS. 2SC1213A (C)
Q006	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q008	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q009	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q101	2320144M	TRS. 2SC1906 (TAPE) SI 750MHZ
Q201	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q202	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q203	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q301	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q302	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q305	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q306	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q308	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
Q309	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q30A	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q30C	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q30E	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q30H	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q30K	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q310	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q312	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q314	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q315	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q401	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q402	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q403	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q404	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q405	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q406	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q407	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ4
Q50C	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q601	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q602	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q603	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q701	2323523M	TRS. 2SD789 D TAPE
⚠Q702	2315275F	TRS. 2SC4589-06 (1500V)
⚠Q703	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
⚠Q708	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q709	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q70A	2323431	TRS. 2SC1983
Q70H	2315411	TRS. 2SD2012
Q710	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q752	2323434	TRS. 2SC1983 (O/Y)
Q761	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q901	2327883M	TRS. 2SA1207 (S/T) SI 150MHZ
Q904	2326216	TRS. 2SC3116 (S/T)
⚠Q905	2328451	TRS. FN651
Q906	2320631M	TRS. 2SA673 (B 26TZ/C 26TZ) SI 80MHZ
Q907	2323526M	TRS. 2SD789 D/E TAPE
Q908	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
Q909	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q90A	2320681M	TRS. 2SA673A (BC) TAPE
Q90C	2326631	THYRISTOR CR5AS-8 (B-A1)
Q90H	2320663M	TRS. 2SC1213A (C)
		CPT PWB TRANSISTORS
Q650	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)
Q750	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q751	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q752	2320663M	TRS. 2SC1213A (C)
Q753	2321321M	TRS. 2SA844 (D TZ/E TZ) SI 200MHZ
Q801	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q802	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q803	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q804	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q805	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q806	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q807	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q808	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q809	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q810	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q811	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q812	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q813	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ

SYMBOL NO.	PART NO.	PART DESCRIPTION
Q814	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q815	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
Q851	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
Q852	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
Q853	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
Q854	2312371	TRS. 2SC3942 (RL)
Q855	2312371	TRS. 2SC3942 (RL)
Q856	2312371	TRS. 2SC3942 (RL)
Q857	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
Q864	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
		PINP PWB TRANSISTORS
QA01	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA02	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA03	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QA04	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA05	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA08	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA09	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA10	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA11	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA16	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA17	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA18	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QA19	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
QA20	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ
		35V CONTROL PWB TRANSISTORS
Q3801	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ) (35V)
Q3802	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ) (35V)
		35V MAGNETIC FIELD PWB TRANSISTORS
QMF1	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ4 (35V)
QY01	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ (35V)
QY02	2320596M	TRS. 2SC458 (C TZ/D TZ) SI 230MHZ (35V)
		MAIN PWB RESISTORS
R001	0700041M	CF 1/16W 1.0K-JB
R002	0700041M	CF 1/16W 1.0K-JB
R003	0700041M	CF 1/16W 1.0K-JB
R004	0700041M	CF 1/16W 1.0K-JB (32V)
R005	0700041M	CF 1/16W 1.0K-JB
R006	0700041M	CF 1/16W 1.0K-JB
R007	0700041M	CF 1/16W 1.0K-JB
R008	0700049M	CF 1/16W 4.7K-JB
R009	0700041M	CF 1/16W 1.0K-JB
R00A	0700041M	CF 1/16W 1.0K-JB
R00C	0700067M	CF 1/16W 100K-JB
R00E	0700051M	CF 1/16W 5.6K-JB
R00H	0700067M	CF 1/16W 100K-JB
R00K	0700064M	CF 1/16W 56K-JB
R010	0700045M	CF 1/16W 2.2K-JB
R011	0700049M	CF 1/16W 4.7K-JB
R012	0700042M	CF 1/16W 1.2K-JB (32V)
R013	0700041M	CF 1/16W 1.0K-JB (32V)
R014	0700043M	CF 1/16W 1.5K-JB (32V)
R015	0700046M	CF 1/16W 2.7K-JB (32V)
R016	0700049M	CF 1/16W 4.7K-JB (32V)

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R017	0700032M	CF 1/16W 220-JB
R019	0700047M	CF 1/16W 3.3K-JB
R01A	0700041M	CF 1/16W 1.0K-JB
R01C	0700054M	CF 1/16W 10K-JB
R01E	0700041M	CF 1/16W 1.0K-JB
R01H	0700041M	CF 1/16W 1.0K-JB
R01K	0700041M	CF 1/16W 1.0K-JB
R020	0700041M	CF 1/16W 1.0K-JB
R021	0700038M	CF 1/16W 680-JB (35V)
R021	0700036M	CF 1/16W 470-JB (32V)
R022	0700058M	CF 1/16W 22K-JB
R023	0700048M	CF 1/16W 3.9K-JB
R024	0700041M	CF 1/16W 1.0K-JB
R025	0700041M	CF 1/16W 1.0K-JB
R026	0700052M	CF 1/16W 6.8K-JB
R027	0700046M	CF 1/16W 2.7K-JB (35V)
R027	0700047M	CF 1/16W 3.3K-JB (32V)
R028	0700043M	CF 1/16W 1.5K-JB
R029	0700052M	CF 1/16W 6.8K-JB
R02A	0700056M	CF 1/16W 15K-JB
R02C	0700059M	CF 1/16W 27K-JB
R02E	0700056M	CF 1/16W 15K-JB
R02H	0700058M	CF 1/16W 22K-JB
R02K	0700059M	CF 1/16W 27K-JB
R030	0700056M	CF 1/16W 15K-JB
R031	0700056M	CF 1/16W 15K-JB
R032	0700046M	CF 1/16W 2.7K-JB (35V)
R032	0700049M	CF 1/16W 4.7K-JB (32V)
R033	0700052M	CF 1/16W 6.8K-JB
R034	0700053M	CF 1/16W 8.2K-JB (35V)
R034	0700054M	CF 1/16W 10K-JB (32V)
R035	0700052M	CF 1/16W 6.8K-JB (35V)
R035	0700055M	CF 1/16W 12K-JB (32V)
R036	0700055M	CF 1/16W 12K-JB
R037	0700041M	CF 1/16W 1.0K-JB
R038	0100065M	CF 1/8W 1K-JB
R039	0700041M	CF 1/16W 1.0K-JB
R03A	0700041M	CF 1/16W 1.0K-JB
R03C	0700041M	CF 1/16W 1.0K-JB
R03E	0700041M	CF 1/16W 1.0K-JB
R03H	0700041M	CF 1/16W 1.0K-JB
R03K	0700041M	CF 1/16W 1.0K-JB
R040	0700041M	CF 1/16W 1.0K-JB
R041	0700041M	CF 1/16W 1.0K-JB
R042	0700041M	CF 1/16W 1.0K-JB
R043	0700041M	CF 1/16W 1.0K-JB
R044	0700055M	CF 1/16W 12K-JB
R045	0700058M	CF 1/16W 22K-JB
R046	0700067M	CF 1/16W 100K-JB
R047	0700045M	CF 1/16W 2.2K-JB
R048	0700047M	CF 1/16W 3.3K-JB
R049	0700053M	CF 1/16W 8.2K-JB
R04A	0700046M	CF 1/16W 2.7K-JB (35V)
R04A	0700045M	CF 1/16W 2.2K-JB (32V)
R04C	0700041M	CF 1/16W 1.0K-JB
R04E	0700041M	CF 1/16W 1.0K-JB
R04H	0700048M	CF 1/16W 3.9K-JB (35V)
R04H	0700045M	CF 1/16W 2.2K-JB (32V)
R04K	0700041M	CF 1/16W 1.0K-JB
R050	0700041M	CF 1/16W 1.0K-JB
R051	0700041M	CF 1/16W 1.0K-JB
R055	0700054M	CF 1/16W 10K-JB
R056	0700054M	CF 1/16W 10K-JB
R057	0700041M	CF 1/16W 1.0K-JB
R058	0700041M	CF 1/16W 1.0K-JB
R059	0700052M	CF 1/16W 6.8K-JB
R05A	0700054M	CF 1/16W 10K-JB
R05C	0700041M	CF 1/16W 1.0K-JB
R05E	0700054M	CF 1/16W 10K-JB
R05H	0700054M	CF 1/16W 10K-JB
R05K	0700058M	CF 1/16W 22K-JB
R060	0700058M	CF 1/16W 22K-JB
R061	0700061M	CF 1/16W 33K-JB
R062	0100065M	CF 1/8W 1K-JB
R063	0100065M	CF 1/8W 1K-JB
R064	0100065M	CF 1/8W 1K-JB
⚠R066	0119514S	CF RN 1/4P 10-J
R067	0700036M	CF 1/16W 470-JB
R068	0700041M	CF 1/16W 1.0K-JB
R069	0700041M	CF 1/16W 1.0K-JB
R06C	0700051M	CF 1/16W 5.6K-JB
R06E	0700045M	CF 1/16W 2.2K-JB
R06F	0700049M	CF 1/16W 4.7K-JB
R06H	0700041M	CF 1/16W 1.0K-JB
R06K	0700067M	CF 1/16W 100K-JB
R070	0700049M	CF 1/16W 4.7K-JB
R071	0700054M	CF 1/16W 10K-JB (32V)
R072	0700049M	CF 1/16W 4.7K-JB (35V)
R072	0700047M	CF 1/16W 3.3K-JB (32V)
R073	0700049M	CF 1/16W 4.7K-JB (35V)
R073	0700047M	CF 1/16W 3.3K-JB (32V)
R074	0700049M	CF 1/16W 4.7K-JB (35V)
R074	0700047M	CF 1/16W 3.3K-JB (32V)
R075	0100065M	CF 1/8W 1K-JB
R080	0700054M	CF 1/16W 10K-JB
R081	0700054M	CF 1/16W 10K-JB
R083	0700049M	CF 1/16W 4.7K-JB
R084	0700058M	CF 1/16W 22K-JB
R085	0700067M	CF 1/16W 100K-JB
R086	0700031M	CF 1/16W 180-JB
R087	0700041M	CF 1/16W 1.0K-JB
R08C	0700056M	CF 1/16W 15K-JB
R091	0700058M	CF 1/16W 22K-JB
R092	0700054M	CF 1/16W 10K-JB
R093	0700041M	CF 1/16W 1.0K-JB
R094	0700049M	CF 1/16W 4.7K-JB
R095	0700041M	CF 1/16W 1.0K-JB
R096	0700054M	CF 1/16W 10K-JB
R097	0700054M	CF 1/16W 10K-JB
R098	0700049M	CF 1/16W 4.7K-JB
R099	0700054M	CF 1/16W 10K-JB
R09A	0700054M	CF 1/16W 10K-JB
R09C	0700041M	CF 1/16W 1.0K-JB
R09H	0700054M	CF 1/16W 10K-JB
R09K	0700041M	CF 1/16W 1.0K-JB
R0L1	0700054M	CF 1/16W 10K-JB
R101	0700031M	CF 1/16W 180-JB
R102	0700046M	CF 1/16W 2.7K-JB
R103	0700014M	CF 1/16W 10-J
R104	0700042M	CF 1/16W 1.2K-JB
R105	0700023M	CF 1/16W 47-J
R106	0700033M	CF 1/16W 270-JB
R107	0100061M	CF 1/8W 680-JB
R108	0187040M	CF 1/16W 91-J

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R109	0700045M	CF 1/16W 2.2K-JB (35V)
R109	0700048M	CF 1/16W 3.9K-JB (32V)
R110	0700045M	CF 1/16W 2.2K-JB (35V)
R110	0700048M	CF 1/16W 3.9K-JB (32V)
R201	0700058M	CF 1/16W 22K-JB
R202	0150287	VR RV06 10K-B
R203	0700067M	CF 1/16W 100K-JB
R204	0700043M	CF 1/16W 1.5K-JB
R205	0700049M	CF 1/16W 4.7K-JB
R206	0700027M	CF 1/16W 100-JB
R207	0700041M	CF 1/16W 1.0K-JB
R208	0700033M	CF 1/16W 270-JB
R209	0700051M	CF 1/16W 5.6K-JB
R20A	0100121M	CF 1/8W 220K-JB
R20C	0100127M	CF 1/8W 390K-JB
R20E	0700041M	CF 1/16W 1.0K-JB
R20H	0100117M	CF 1/8W 150K-JB
R20K	0700041M	CF 1/16W 1.0K-JB
R210	0700036M	CF 1/16W 470-JB
R211	0100055M	CF 1/8W 390-JB
R212	0700027M	CF 1/16W 100-JB
R213	0700041M	CF 1/16W 1.0K-JB
R214	0700033M	CF 1/16W 270-JB
R216	0700027M	CF 1/16W 100-JB
R217	0700027M	CF 1/16W 100-JB
R2Z1	0700036M	CF 1/16W 470-JB
R2Z2	0700037M	CF 1/16W 560-JB
R302	0100133M	CF 1/8W 680K-JB (35V)
R302	0100127M	CF 1/8W 390K-JB (32V)
R303	0700056M	CF 1/16W 15K-JB
R305	0700036M	CF 1/16W 470-JB
R306	0700034M	CF 1/16W 330-JB (35V)
R306	0700033M	CF 1/16W 270-JB (32V)
R307	0700034M	CF 1/16W 330-JB (35V)
R307	0700035M	CF 1/16W 390-JB (32V)
R308	0700038M	CF 1/16W 680-JB
R309	0700037M	CF 1/16W 560-JB
R30E	0700054M	CF 1/16W 10K-JB
R30H	0700038M	CF 1/16W 680-JB
R30K	0700063M	CF 1/16W 47K-JB
R310	0700054M	CF 1/16W 10K-JB
R312	0100033M	CF 1/8W 47-JB
R316	0700037M	CF 1/16W 560-JB
R317	0700029M	CF 1/16W 150-JB
R318	0187060M	CF 1/16W 620-JB
R31C	0700041M	CF 1/16W 1.0K-JB
R31E	0700063M	CF 1/16W 47K-JB
R31H	0700041M	CF 1/16W 1.0K-JB
R31K	0700041M	CF 1/16W 1.0K-JB
R320	0700063M	CF 1/16W 47K-JB
R321	0700037M	CF 1/16W 560-JB
R322	0700041M	CF 1/16W 1.0K-JB
R323	0150282	VR RV06 500-B
R324	0700038M	CF 1/16W 680-JB
R325	0700045M	CF 1/16W 2.2K-JB
R326	0700032M	CF 1/16W 220-JB
R327	0700033M	CF 1/16W 270-JB
R328	0700033M	CF 1/16W 270-JB
R329	0700039M	CF 1/16W 820-JB
R32C	0700037M	CF 1/16W 560-JB
R32E	0150283	VR RV6 1K-B CARBON FL
R32H	0700039M	CF 1/16W 820-JB
R32K	0700037M	CF 1/16W 560-JB
R330	0700041M	CF 1/16W 1.0K-JB
R331	0700027M	CF 1/16W 100-JB
R332	0700038M	CF 1/16W 680-JB
R333	0150282	VR RV06 500-B
R334	0100055M	CF 1/8W 390-JB
R335	0700032M	CF 1/16W 220-JB
R336	0700054M	CF 1/16W 10K-JB
R337	0700058M	CF 1/16W 22K-JB
R338	0700036M	CF 1/16W 470-JB
R339	0187060M	CF 1/16W 620-JB
R33A	0700035M	CF 1/16W 390-JB
R33C	0700037M	CF 1/16W 560-JB
R33E	0700057M	CF 1/16W 18K-JB
R33H	0700032M	CF 1/16W 220-JB
R340	0150287	VR RV06 10K-B
R341	0700052M	CF 1/16W 6.8K-JB
R342	0700049M	CF 1/16W 4.7K-JB
R343	0700049M	CF 1/16W 4.7K-JB
R344	0700051M	CF 1/16W 5.6K-JB
R345	0700031M	CF 1/16W 180-JB
R346	0700061M	CF 1/16W 33K-JB
R348	0100041M	CF 1/8W 100-JB
R349	0100041M	CF 1/8W 100-JB
R34A	0100038M	CF 1/8W 75-JB
R34C	0100041M	CF 1/8W 100-JB
R34H	0100038M	CF 1/8W 75-JB
R34K	0100038M	CF 1/8W 75-JB (32V)
R350	0100041M	CF 1/8W 100-JB
R351	0100041M	CF 1/8W 100-JB
R352	0700041M	CF 1/16W 1.0K-JB
R354	0700027M	CF 1/16W 100-JB
R355	0700049M	CF 1/16W 4.7K-JB
R356	0700054M	CF 1/16W 10K-JB
R358	0700056M	CF 1/16W 15K-JB
R359	0700054M	CF 1/16W 10K-JB
R35A	0700057M	CF 1/16W 18K-JB
R35E	0700041M	CF 1/16W 1.0K-JB
R360	0700041M	CF 1/16W 1.0K-JB
R364	0700054M	CF 1/16W 10K-JB
R365	0700034M	CF 1/16W 330-JB
R366	0700054M	CF 1/16W 10K-JB
R367	0700054M	CF 1/16W 10K-JB
R390	0700035M	CF 1/16W 390-JB
R391	0100133M	CF 1/8W 680K-JB (32V)
R392	0700032M	CF 1/16W 220-JB
R393	0100049M	CF 1/8W 220-JB
R395	0700027M	CF 1/16W 100-JB
R396	0700042M	CF 1/16W 1.2K-JB
R397	0700051M	CF 1/16W 5.6K-JB
R39A	0700054M	CF 1/16W 10K-JB
R401	0700041M	CF 1/16W 1.0K-JB
R402	0700034M	CF 1/16W 330-JB
R403	0700041M	CF 1/16W 1.0K-JB
R404	0700062M	CF 1/16W 39K-JB
R405	0700041M	CF 1/16W 1.0K-JB
R406	0700054M	CF 1/16W 10K-JB
R407	0700041M	CF 1/16W 1.0K-JB
R408	0700041M	CF 1/16W 1.0K-JB
R409	0700034M	CF 1/16W 330-JB
R40A	0700041M	CF 1/16W 1.0K-JB
R40C	0700054M	CF 1/16W 10K-JB

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R40E	0700063M	CF 1/16W 47K-JB
R40H	0700062M	CF 1/16W 39K-JB
R40K	0700063M	CF 1/16W 47K-JB
R410	0700063M	CF 1/16W 47K-JB
R411	0700063M	CF 1/16W 47K-JB
R412	0700063M	CF 1/16W 47K-JB
R413	0700063M	CF 1/16W 47K-JB
R415	0187082M	CF 1/16W 5.1K-JB
R416	0100116M	CF 1/8W 130K-JB
R417	0100117M	CF 1/8W 150K-JB
R418	0150160	VR RV06 100K-B 0.1W
R419	0700036M	CF 1/16W 470-JB
R41A	0700036M	CF 1/16W 470-JB
R41C	0700041M	CF 1/16W 1.0K-JB
R41E	0700046M	CF 1/16W 2.7K-JB
R41K	0150287	VR RV06 10K-B
R420	0100125M	CF 1/8W 330K-JB
R421	0700054M	CF 1/16W 10K-JB
R422	0700045M	CF 1/16W 2.2K-JB
R423	0150157	VR RV06 20K-B 0.1W
R424	0700061M	CF 1/16W 33K-JB
R425	0100133M	CF 1/8W 680K-JB
R427	0700067M	CF 1/16W 100K-JB
R428	0100116M	CF 1/8W 130K-JB
R429	0150290	VR RV06 50K-B
R42A	0150290	VR RV06 50K-B
R42E	0700047M	CF 1/16W 3.3K-JB
R42F	0700036M	CF 1/16W 470-JB
R42G	0100133M	CF 1/8W 680K-JB
R42K	0100117M	CF 1/8W 150K-JB
R430	0700041M	CF 1/16W 1.0K-JB
R431	0700041M	CF 1/16W 1.0K-JB
R432	0700046M	CF 1/16W 2.7K-JB
R433	0700041M	CF 1/16W 1.0K-JB
R434	0700041M	CF 1/16W 1.0K-JB
R435	0700037M	CF 1/16W 560-JB
R436	0700037M	CF 1/16W 560-JB
R437	0700037M	CF 1/16W 560-JB
R438	0700037M	CF 1/16W 560-JB
R439	0700041M	CF 1/16W 1.0K-JB
R43A	0700041M	CF 1/16W 1.0K-JB
R43C	0700041M	CF 1/16W 1.0K-JB
R43E	0700049M	CF 1/16W 4.7K-JB
R43H	0700041M	CF 1/16W 1.0K-JB
R43K	0700054M	CF 1/16W 10K-JB
R440	0700045M	CF 1/16W 2.2K-JB
R441	0700045M	CF 1/16W 2.2K-JB
R442	0700041M	CF 1/16W 1.0K-JB
R443	0700041M	CF 1/16W 1.0K-JB
R444	0700048M	CF 1/16W 3.9K-JB
R445	0700048M	CF 1/16W 3.9K-JB
R446	0700034M	CF 1/16W 330-JB
R447	0100113M	CF 1/8W 100K-JB
R448	0700034M	CF 1/16W 330-JB
⚠R449	0119505G	MF 2.2-J
R44A	0700063M	CF 1/16W 47K-JB
R44C	0700063M	CF 1/16W 47K-JB
R44E	0100077M	CF 1/8W 3.3K-JB
⚠R44H	0119505G	MF 2.2-J
⚠R44K	0119687S	MF 4.7-J 1/4W
R450	0100077M	CF 1/8W 3.3K-JB
R451	0100133M	CF 1/8W 680K-JB (35V)
R452	0700063M	CF 1/16W 47K-JB
R453	0700045M	CF 1/16W 2.2K-JB
R454	0700063M	CF 1/16W 47K-JB
R458	0700063M	CF 1/16W 47K-JB
R45A	0700049M	CF 1/16W 4.7K-JB
R45H	0700049M	CF 1/16W 4.7K-JB
R470	0100065M	CF 1/8W 1K-JB
R471	0100113M	CF 1/8W 100K-JB
R472	0700063M	CF 1/16W 47K-JB
R473	0100113M	CF 1/8W 100K-JB
R474	0100065M	CF 1/8W 1K-JB
R475	0700063M	CF 1/16W 47K-JB
R476	0100113M	CF 1/8W 100K-JB
R477	0100065M	CF 1/8W 1K-JB
R478	0700063M	CF 1/16W 47K-JB
R479	0100113M	CF 1/8W 100K-JB
R47A	0100065M	CF 1/8W 1K-JB
R47C	0100065M	CF 1/8W 1K-JB
R47E	0100113M	CF 1/8W 100K-JB
R47F	0100065M	CF 1/8W 1K-JB
R47H	0700063M	CF 1/16W 47K-JB
R47K	0100113M	CF 1/8W 100K-JB
R480	0100065M	CF 1/8W 1K-JB
R481	0100113M	CF 1/8W 100K-JB (32V)
R482	0700063M	CF 1/16W 47K-JB
R483	0100065M	CF 1/8W 1K-JB
R484	0100113M	CF 1/8W 100K-JB (32V)
R485	0700063M	CF 1/16W 47K-JB
⚠R490	0119514	MF 1/4W 10-J
R501	0700057M	CF 1/16W 18K-JB
R502	0700058M	CF 1/16W 22K-JB
R519	0700054M	CF 1/16W 10K-JB
R51A	0700041M	CF 1/16W 1.0K-JB
R51C	0700054M	CF 1/16W 10K-JB
R51E	0100049M	CF 1/8W 220-JB
R51H	0700054M	CF 1/16W 10K-JB
R51K	0100049M	CF 1/8W 220-JB
R520	0100049M	CF 1/8W 220-JB
R521	0700061M	CF 1/16W 33K-JB
R522	0700031M	CF 1/16W 180-JB
R601	0700058M	CF 1/16W 22K-JB
R602	0700027M	CF 1/16W 100-JB
R603	0700059M	CF 1/16W 27K-JB
R604	0700054M	CF 1/16W 10K-JB
R607	0100119M	CF 1/8W 180K-JB
R608	0700038M	CF 1/16W 680-JB
R609	0700042M	CF 1/16W 1.2K-JB
R60A	0700041M	CF 1/16W 1.0K-JB
R60C	0100055M	CF 1/8W 390-JB
R60E	0700041M	CF 1/16W 1.0K-JB
R60H	0700032M	CF 1/16W 220-JB
R610	0700048M	CF 1/16W 3.9K-JB
R613	0700055M	CF 1/16W 12K-JB
R614	0700048M	CF 1/16W 3.9K-JB
R621	0700035M	CF 1/16W 390-JB
R622	0700065M	CF 1/16W 68K-JB
R623	0700058M	CF 1/16W 22K-JB
R624	0100131M	CF 1/8W 560K-JB
R625	0114135M	CF 1/4W 150-JB
R626	0700059M	CF 1/16W 27K-JB
R627	0100129M	CF 1/8W 470K-JB
R628	0187106M	CF 1/16W 51K-JB

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R629	0187104M	CF 1/16W 43K-JB (35V)
R629	0700064M	CF 1/16W 56K-JB (32V)
R62A	0150160	VR RV06 100K-B 0.1W
R62C	0119731M	MF 1W R68-K TAPE (35V)
R62C	0119841M	MF 1W 0.82-JB (32V)
R62H	0700043M	CF 1/16W 1.5K-JB (35V)
R62H	0700044M	CF 1/16W 1.8K-JB (32V)
R62K	0700037M	CF 1/16W 560-JB
R630	0700032M	CF 1/16W 220-JB
R631	0700067M	CF 1/16W 100K-JB (35V)
R631	0700065M	CF 1/16W 68K-JB (32V)
R632	0114161M	CF 1/4W 1K-JB (35V)
R632	0114163M	CF 1/4W 1.2K-JB (32V)
R634	0114161M	CF 1/4W 1K-JB (35V)
R636	0113746M	CF 1/2W 680-JB
R637	0110115S	MF 56-JS
R64C	0700049M	CF 1/16W 4.7K-JB
R650	0700067M	CF 1/16W 100K-JB
R651	0100125M	CF 1/8W 330K-JB
R652	0700057M	CF 1/16W 18K-JB
R701	0700036M	CF 1/16W 470-JB
R702	0700045M	CF 1/16W 2.2K-JB
R703	0700041M	CF 1/16W 1.0K-JB
R704	0150287	VR RV06 10K-B
⚠R705	0700054M	CF 1/16W 10K-JB
R706	0700045M	CF 1/16W 2.2K-JB
R707	0700029M	CF 1/16W 150-JB
R708	0100125M	CF 1/8W 330K-JB
R709	0114141M	CF 1/4W 270-JB
R70A	0114141M	CF 1/4W 270-JB
R710	0700033M	CF 1/16W 270-JB
R716	0113729M	CF 1/2W 150-JB
R717	0700067M	CF 1/16W 100K-JB
⚠R718	0100037M	CF 1/8W 68-JB
R720	0114141M	CF 1/4W 270-JB
⚠R721	0119838S	MF 1/4-S 0.5-J
⚠R725	0119505G	MF 2.2-J
⚠R726	0119505G	MF 2.2-J
R727	0119688M	MF 1W 0.22-JB
R728	0700044M	CF 1/16W 1.8K-JB
⚠R729	0700048M	CF 1/16W 3.9K-JB
R732	0100077M	CF 1/8W 3.3K-JB
R734	0113748M	CF 1/2 P-B 820-JB
R735	0113750M	CF 1/2W 1K-JB
⚠R736	0700032M	CF 1/16W 220-JB
⚠R738	0700045M	CF 1/16W 2.2K-JB
R739	0700041M	CF 1/16W 1.0K-JB
R73A	0114049M	CF 1/4W 22-JB
R73C	0700023M	CF 1/16W 47-J
⚠R73E	0119838S	MF 1/4-S 0.5-J
R73H	0114161M	CF 1/4W 1K-JB
R73K	0700036M	CF 1/16W 470-JB
R740	0110125S	MF 150-JS (32V)
⚠R745	0700054M	CF 1/16W 10K-JB
⚠R746	0700053M	CF 1/16W 8.2K-JB
R74A	0100061M	CF 1/8W 680-JB
R74C	0100103M	CF 1/8W 39K-JB (35V)
R74C	0100107M	CF 1/8W 56K-JB (32V)
R74H	0100109M	CF 1/8W 68K-JB (35V)
R74H	0100107M	CF 1/8W 56K-JB (32V)
R750A	0114131M	CF 1/4W 100-JB
R763	0110259S	MF 3.9K-JS
R765	0100071M	CF 1/8W 1.8K-JB
⚠R781	0100073M	CF 1/8W 2.2K-JB
R782	0700054M	CF 1/16W 10K-JB
R783	0700046M	CF 1/16W 2.7K-JB
R785	0700054M	CF 1/16W 10K-JB
R786	0110241S	MF 680-JS
R787	0110219	MF 82-J 2W
R788	0700063M	CF 1/16W 47K-JB
R789	0700061M	CF 1/16W 33K-JB
R790	0700046M	CF 1/16W 2.7K-JB
R791	0700049M	CF 1/16W 4.7K-JB
R793	0110177S	MF 22K-JS
R794	0110257S	MF 3.3K-JS
R798	0113760M	CF 1/2W 2.7K-JB
⚠R901	2341281	THERMISTOR 3R0Q
⚠R902	0147811	WW 15W 1.5-KM
⚠R903	0141161	WW 15W 220-JF
R904	0110221S	MF 100-JS
R905	0110197S	MF 2W 10-JS
R906	0110197S	MF 2W 10-JS
R907	0110173S	MF 15K-JS
R908	0100113M	CF 1/8W 100K-JB
R909	0100129M	CF 1/8W 470K-JB
R90A	0119722M	MF 1.0-JB/W
R90C	0700053M	CF 1/16W 8.2K-JB
R90F	0110125S	MF 150-JS
R90H	0114059M	CF SRD 1/4 PF 56-J
R90K	0110125S	MF 150-JS
R910	0100133M	CF 1/8W 680K-JB
R912	0141161	WW 15W 220-JF (35V)
R912	0141159	WW 15W 180-JF (32V)
R914	0110155S	MF 2.7K-JS 1W
R915	0110261S	MF 4.7K-JS
R916	0114221M	CF 1/4 PB 68K-J
R917	0114209M	CF SRD 1/4 PF 22K-J
R918	0100010M	CF 1/8W 5.1-JB
R919	0700027M	CF 1/16W 100-JB
R91A	0700032M	CF 1/16W 220-JB
R91C	0100101M	CF 1/8W 33K-JB
R91E	0110129S	MF 220-JS
R91F	0114171M	CF 1/4W 2.7K-JB
R91H	0114053M	CF SRD 1/4 PB 33-J
R91K	0110141S	MF 680-JS
R920	0700027M	CF 1/16W 100-JB
R921	0700067M	CF 1/16W 100K-JB
R922	0114179M	CFSRD 1/4 PF 5.6K-J
R923	0114149M	CF SRD 1/4 PF 560-J
R924	0147620	WW 2.7-KF
R925	0100073M	CF 1/8W 2.2K-JB
R926	0700049M	CF 1/16W 4.7K-JB
R927	0700064M	CF 1/16W 56K-JB
R928	0700051M	CF 1/16W 5.6K-JB
R929	0700061M	CF 1/16W 33K-JB
R92A	0113750M	CF 1/2W 1K-JB
R92C	0700046M	CF 1/16W 2.7K-JB
R92E	0113725M	CF SRD1/2P-B 100-J
R92F	0113746M	CF 1/2W 680-JB
R92H	0700032M	CF 1/16W 220-JB
R92K	0700064M	CF 1/16W 56K-JB
R930	0700051M	CF 1/16W 5.6K-JB
R931	0700051M	CF 1/16W 5.6K-JB
R932	0700051M	CF 1/16W 5.6K-JB

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
⚠R933	0119508S	MF 1/4W 56-JF
R934	0100029M	CF 1/8W 33-JB
R935	0700051M	CF 1/16W 5.6K-JB
R936	0110197S	MF 2W 10-JS
R937	0700051M	CF 1/16W 5.6K-JB
R938	0110281S	MF 33K-JS
⚠R939	0119505G	MF 2.2-J
R93A	0100111M	CF 1/8W 82K-JB
R93H	0113746M	CF 1/2W 680-JB
R941	0100101M	CF 1/8W 33K-JB
R942	0110217S	MF 68-JS
R944	0110223S	MF 120-JS
R969	0147060	WW 2W 33-K
R970	0141195	WW 10W 330-J
RA01	0100066M	CF 1/8W 1.1K-JB (35V)
RA02	0100065M	CF 1/8W 1K-JB (35V)
RA03	0100065M	CF 1/8W 1K-JB (35V)
RA04	0100065M	CF 1/8W 1K-JB (35V)
RAZ1	0700036M	CF 1/16W 470-JB
RAZ2	0700037M	CF 1/16W 560-JB
RTP15	0110125S	MF 150-JS
RV1N	0700037M	CF 1/16W 560-JB
		CPT PWB RESISTORS
R361	0100038M	CF 1/8W 75-JB
R362	0100038M	CF 1/8W 75-JB
R647	0700044M	CF 1/16W 1.8K-JB
R648	0114143M	CF 1/4W 330-JB
R649	0100056M	CF 1/8W 430-JB
R651	0700067M	CF 1/16W 100K-JB (35V)
R651	0700066M	CF 1/16W 82K-JB (32V)
R652	0700064M	CF 1/16W 56K-JB (35V)
R652	0700066M	CF 1/16W 82K-JB (32V)
R653	0700064M	CF 1/16W 56K-JB
R654	0700057M	CF 1/16W 18K-JB
R655	0700059M	CF 1/16W 27K-JB (35V)
R655	0700063M	CF 1/16W 47K-JB (32V)
R656	0700049M	CF 1/16W 4.7K-JB
R657	0100117M	CF 1/8W 150K-JB (35V)
R657	0100119M	CF 1/8W 180K-JB (32V)
R658	0700055M	CF 1/16W 12K-JB (35V)
R658	0700058M	CF 1/16W 22K-JB (32V)
R659	0100117M	CF 1/8W 150K-JB
R663	0700059M	CF 1/16W 27K-JB
R664	0700066M	CF 1/16W 82K-JB (35V)
R664	0700063M	CF 1/16W 47K-JB (32V)
R665	0700064M	CF 1/16W 56K-JB
R666	0700061M	CF 1/16W 33K-JB
R667	0100133M	CF 1/8W 680K-JB
R668	2340371	THERMISTOR 112301-9
R669	0700067M	CF 1/16W 100K-JB
R670	0700045M	CF 1/16W 2.2K-JB
R671	0700065M	CF 1/16W 68K-JB (35V)
R750	0100073M	CF 1/8W 2.2K-JB
R751	0700065M	CF 1/16W 68K-JB
R752	0150279	VR RV06 100K-B (V)
R753	0700056M	CF 1/16W 15K-JB
R754	0700038M	CF 1/16W 680-JB
R755	0150276	VR RV06 20K-B (V)
R756	0700057M	CF 1/16W 18K-JB
R757	0700064M	CF 1/16W 56K-JB

SYMBOL NO.	PART NO.	PART DESCRIPTION
R758	0700051M	CF 1/16W 5.6K-JB
R759	0700064M	CF 1/16W 56K-JB
R760	0700066M	CF 1/16W 82K-JB
R762	0700058M	CF 1/16W 22K-JB
R764	0100075M	CF 1/8W 2.7K-JB
R766	0700027M	CF 1/16W 100-JB
R767	0700044M	CF 1/16W 1.8K-JB
R768	0700056M	CF 1/16W 15K-JB
R769	0700054M	CF 1/16W 10K-JB
R770	0100115M	CF 1/8W 120K-JB
R771	0700055M	CF 1/16W 12K-JB
R772	0700046M	CF 1/16W 2.7K-JB
R773	0700049M	CF 1/16W 4.7K-JB
R774	0700055M	CF 1/16W 12K-JB
R775	0150275	VR RV06 10K-B (V)
R776	0700051M	CF 1/16W 5.6K-JB
R801	0700043M	CF 1/16W 1.5K-JB
R802	0700054M	CF 1/16W 10K-JB
R805	0700023M	CF 1/16W 47-J (35V)
R805	0700026M	CF 1/16P 82-JB (32V)
R806	0150109	VR RV6 200-B
R807	0150272	VR RV06 2K-B (V)
R808	0700038M	CF 1/16W 680-JB
R809	0700038M	CF 1/16W 680-JB
R811	0700026M	CF 1/16P 82-JB (35V)
R811	0700024M	CF 1/16W 56-J (32V)
R813	0700038M	CF 1/16W 680-JB
R814	0150272	VR RV06 2K-B (V)
R815	0700023M	CF 1/16W 47-J (35V)
R815	0700027M	CF 1/16W 100-JB (32V)
R816	0150109	VR RV6 200-B
R817	0700038M	CF 1/16W 680-JB
R818	0150272	VR RV06 2K-B (V)
R819	0700064M	CF 1/16W 56K-JB
R820	0100049M	CF 1/8W 220-JB
R821	0100049M	CF 1/8W 220-JB
R822	0100049M	CF 1/8W 220-JB
R824	0100063M	CF 1/8W 820-JB
R825	0100063M	CF 1/8W 820-JB
R826	0100057M	CF 1/8W 470-JB
R827	0100057M	CF 1/8W 470-JB
R828	0100057M	CF 1/8W 470-JB
R829	0700043M	CF 1/16W 1.5K-JB
R830	0700043M	CF 1/16W 1.5K-JB
R831	0700043M	CF 1/16W 1.5K-JB
R832	0700032M	CF 1/16W 220-JB
R833	0700032M	CF 1/16W 220-JB
R834	0700032M	CF 1/16W 220-JB
R835	0187074M	CF 1/16W 2.4K-JB
R836	0700044M	CF 1/16W 1.8K-JB
R837	0700038M	CF 1/16W 680-JB
R838	0700035M	CF 1/16W 390-JB
R839	0700041M	CF 1/16W 1.0K-JB
R840	0700046M	CF 1/16W 2.7K-JB
R841	0700041M	CF 1/16W 1.0K-JB
R842	0700051M	CF 1/16W 5.6K-JB
R843	0700043M	CF 1/16W 1.5K-JB
R844	0700052M	CF 1/16W 6.8K-JB
R845	0700035M	CF 1/16W 390-JB
R846	0700041M	CF 1/16W 1.0K-JB
R847	0700041M	CF 1/16W 1.0K-JB
R848	0700051M	CF 1/16W 5.6K-JB

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R849	0700055M	CF 1/16W 12K-JB
R850	0100041M	CF 1/8W 100-JB
⚠R851	0110367S	MF 3W 8.2K-JS (35V)
⚠R851	0110271S	MF 2W 12K-JS (32V)
⚠R852	0110367S	MF 3W 8.2K-JS (35V)
⚠R852	0110271S	MF 2W 12K-JS (32V)
⚠R853	0110367S	MF 3W 8.2K-JS (35V)
⚠R853	0110271S	MF 2W 12K-JS (32V)
R861	0100063M	CF 1/8W 820-JB
R862	0100063M	CF 1/8W 820-JB
R863	0100049M	CF 1/8W 220-JB
R864	0700054M	CF 1/16W 10K-JB
R865	0700048M	CF 1/16W 3.9K-JB
R875	0113750M	CF 1/2W 1K-JB
R876	0113750M	CF 1/2W 1K-JB
R877	0113750M	CF 1/2W 1K-JB
R878	0100049M	CF 1/8W 220-JB
R879	0100049M	CF 1/8W 220-JB
R880	0100049M	CF 1/8W 220-JB
R881	0114131M	CF 1/4W 100-JB
R882	0114131M	CF 1/4W 100-JB
R883	0114131M	CF 1/4W 100-JB
R884	0100037M	CF 1/8W 68-JB (35V)
R884	0100040M	CF 1/8W 91-JB (32V)
R885	0100037M	CF 1/8W 68-JB (35V)
R885	0100040M	CF 1/8W 91-JB (32V)
R886	0100037M	CF 1/8W 68-JB (35V)
R886	0100040M	CF 1/8W 91-JB (32V)
R888	0700023M	CF 1/16W 47-J (35V)
R888	0700027M	CF 1/16W 100-JB (32V)
		PINP PWB RESISTORS
RA02	0700027M	CF 1/16W 100-JB
RA03	0700027M	CF 1/16W 100-JB
RA04	0700036M	CF 1/16W 470-JB
RA05	0100117M	CF 1/8W 150K-JB
RA06	0700037M	CF 1/16W 560-JB
RA07	0700041M	CF 1/16W 1.0K-JB
RA08	0700054M	CF 1/16W 10K-JB
RA09	0700054M	CF 1/16W 10K-JB
RA10	0700027M	CF 1/16W 100-JB
RA11	0700027M	CF 1/16W 100-JB
RA15	0700041M	CF 1/16W 1.0K-JB
RA32	0700047M	CF 1/16W 3.3K-JB
RA33	0700052M	CF 1/16W 6.8K-JB
RA34	0700063M	CF 1/16W 47K-JB
RA35	0700058M	CF 1/16W 22K-JB
RA36	0700054M	CF 1/16W 10K-JB
RA37	0700058M	CF 1/16W 22K-JB
RA38	0700054M	CF 1/16W 10K-JB
RA39	0700035M	CF 1/16W 390-JB
RA40	0700054M	CF 1/16W 10K-JB
RA43	0700067M	CF 1/16W 100K-JB
RA44	0700063M	CF 1/16W 47K-JB
RA45	0700039M	CF 1/16W 820-JB
RA46	0110209S	MF 33-JS
RA47	0110209S	MF 33-JS
RA48	0187038M	CF 1/16W 75-J
RA49	0187038M	CF 1/16W 75-J
RA50	0700028M	CF 1/16W 120-JB
RA51	0700032M	CF 1/16W 220-JB
RA53	0100041M	CF 1/8W 100-JB
RA55	0700027M	CF 1/16W 100-JB
RA56	0100097M	CF 1/8W 22K-JB
RA57	0700027M	CF 1/16W 100-JB
RA58	0700027M	CF 1/16W 100-JB
RA59	0700037M	CF 1/16W 560-JB
RA60	0700066M	CF 1/16W 82K-JB
RA61	0700036M	CF 1/16W 470-JB
RA62	0700028M	CF 1/16W 120-JB
RA63	0179536M	MG 1M J TAPE
RA64	0700043M	CF 1/16W 1.5K-JB
RA65	0187034M	CF 1/16W 51-J
RA66	0700034M	CF 1/16W 330-JB
RA69	0700027M	CF 1/16W 100-JB
RA73	0700032M	CF 1/16W 220-JB
RA74	0700032M	CF 1/16W 220-JB
RA78	0100059M	CF 1/8W 560-JB
RA80	0700041M	CF 1/16W 1.0K-JB
RA81	0700052M	CF 1/16W 6.8K-JB
RA82	0700041M	CF 1/16W 1.0K-JB
RA83	0100059M	CF 1/8W 560-JB
RA84	0700054M	CF 1/16W 10K-JB
RA85	0700063M	CF 1/16W 47K-JB
RA86	0700054M	CF 1/16W 10K-JB
RA87	0100065M	CF 1/8W 1K-JB
RA89	0700058M	CF 1/16W 22K-JB
RA90	0700054M	CF 1/16W 10K-JB
RA91	0700054M	CF 1/16W 10K-JB
RA92	0700054M	CF 1/16W 10K-JB
RA93	0700054M	CF 1/16W 10K-JB
RA94	0700041M	CF 1/16W 1.0K-JB
RA95	0700053M	CF 1/16W 8.2K-JB
RA96	0700056M	CF 1/16W 15K-JB
RA97	0700033M	CF 1/16W 270-JB
RA98	0700043M	CF 1/16W 1.5K-JB
RE01	0700054M	CF 1/16W 10K-JB
RE02	0700037M	CF 1/16W 560-JB
RE04	0100041M	CF 1/8W 100-JB
RE05	0100041M	CF 1/8W 100-JB
RE10	0700055M	CF 1/16W 12K-JB
RE11	0700041M	CF 1/16W 1.0K-JB
RE12	0700058M	CF 1/16W 22K-JB
RE13	0700058M	CF 1/16W 22K-JB
RE20	0700059M	CF 1/16W 27K-JB
RE21	0700059M	CF 1/16W 27K-JB
RE22	0700063M	CF 1/16W 47K-JB
RE23	0700059M	CF 1/16W 27K-JB
RE24	0700059M	CF 1/16W 27K-JB
RE25	0700045M	CF 1/16W 2.2K-JB
RE26	0700042M	CF 1/16W 1.2K-JB
		35V CONTROL PWB RESISTORS
R0504	0100065M	CF 1/8W 1K-JB (35V)
R0516	0700041M	CF 1/16W 1.0K-JB (35V)
R0517	0700043M	CF 1/16W 1.5K-JB (35V)
R0518	0700046M	CF 1/16W 2.7K-JB (35V)
R0519	0700049M	CF 1/16W 4.7K-JB (35V)
R0520	0100065M	CF 1/8W 1K-JB (35V)
R3801	0187038M	CF 1/16W 75-J (35V)
R3802	0100041M	CF 1/8W 100-JB (35V)
R3803	0700041M	CF 1/16W 1.0K-JB (35V)

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
R3804	0700041M	CF 1/16W 1.0K-JB (35V)
R3805	0100123M	CF 1/8W 270K-JB (35V)
R3806	0700064M	CF 1/16W 56K-JB (35V)
R3807	0700047M	CF 1/16W 3.3K-JB (35V)
R3808	0700045M	CF 1/16W 2.2K-JB (35V)
R3809	0700064M	CF 1/16W 56K-JB (35V)
R3810	0100123M	CF 1/8W 270K-JB (35V)
R3811	0700041M	CF 1/16W 1.0K-JB (35V)
R3812	0700041M	CF 1/16W 1.0K-JB (35V)
R3813	0100041M	CF 1/8W 100-JB (35V)
		35V MAGNETIC FIELD PWB RESISTORS
RMF1	0700051M	CF 1/16W 5.6K-JB (35V)
RMF2	0100053M	CF 1/8W 330-JB (35V)
RMF3	0100056M	CF 1/8W 430-JB (35V)
RMF4	0100093M	CF 1/8W 15K-JB (35V)
RY01	0700041M	CF 1/16W 1.0K-JB (35V)
RY02	0700041M	CF 1/16W 1.0K-JB (35V)
RY03	0100057M	CF 1/8W 470-JB (35V)
RY04	0700036M	CF 1/16W 470-JB (35V)
RY05	0700036M	CF 1/16W 470-JB (35V)
RY06	0700027M	CF 1/16W 100-JB (35V)
RY07	0100073M	CF 1/8W 2.2K-JB (35V)
RY08	0700047M	CF 1/16W 3.3K-JB (35V)
RY09	0700058M	CF 1/16W 22K-JB (35V)
RY10	0700057M	CF 1/16W 18K-JB (35V)
RY11	0700055M	CF 1/16W 12K-JB (35V)
		MAIN PWB SWITCHES/RELAY
S001	2632851	5KEY TACT SWITCH (CY61)
S001	2633402	5KEY PUSH SWITCH (CY60)
S002	2632901	1P TACT SWITCH (CY61)
S002	FE00081	PUSH SWITCH KSM0635B (CY60)
S003	2632901	1P TACT SWITCH (CY61)
S003	FE00081	PUSH SWITCH KSM0635B (CY60)
⚠S901	2641222	POWER RELAY
		35V CONTROL PWB SWITCHES
S0501	2633321	5KEY TACT SWITCH (35V)
S0502	2632901	1P TACT SWITCH (35V)
		35V MAGNETIC FIELD PWB SWITCHES
⚠SMF1	2620971	SLIDE SWITCH (35V)
⚠SMF2	2620802	SLIDE SWITCH (35V)
		MAIN PWB TRANSFORMERS
⚠T701	2274353	TRANFORMER-H.DRIVE
⚠T702	2437094	FLY BACK TRANASFORMER-C87LUI
⚠T901	2216002	SWITCHING TRANSFORMER A3LXU3
		MAIN PWB MODULES
⚠U001	2574762	R/C MODULE SPS-409-1K (32V/35V)
⚠U101	2428681	TUNER ET-352A

SYMBOL NO.	PART NO.	PART DESCRIPTION
		MAIN PWB CRYSTALS/OSCILLATORS
X001	2168831	CRYSTAL CSA12.0MTZ
X103	2300477	SAW FILTER HW2267
X201	2167311	FILTER CERAMIC (4.5MHZ)
X202	2167201	TRAP CERAMIC (4.5MHZ)
X301	2793281	DELAY LINE
X302	2794401	DELAY LINE GLASS 63.5US
X501	2791505	CRYSTAL HC-491U 3.58MHZ
X701	2167241	CERAMIC OSC CSB503F
		PINP PWB CRYSTALS/OSCILLATORS
XA01	BP00171	X'TAL 14R3X16THC-49/U
XA02	2167241	CERAMIC OSC CSB503F
		MAIN PWB MISCELLANEOUS PARTS
#	H310431	REMOTE CONTROL FILM
#021	3701202	PWB HOLDER G7-A PA
#106	NT00122	A3LXU3 TERMINAL BOARD
#160	3739671	BS CORD HOLDER NYLON6
#906	PH00971	TERMINAL LABEL (32V)
#908	PH00972	TERMINAL LABEL (35V)
E0P	EF02911	CONNECTOR CO-08CB2-331
E3P1	2976661	CONN. W/WIRE SEH 12J (L300)
E3P2	EF01321	CONNECTOR CO-08C-B2R5-561
E801	2976671	CONN. W/WIRE SEH 4J (L560)
⚠E901	2745411	AC POWER CORD
EF901	2720641	FUSE HOLDER
EF902	2720641	FUSE HOLDER
⚠J301	2983095	8P PIN JACK WITH SWITCH
⚠J30F	2673602	US13 (32V)
JG	2973682S	CONN.W/WIRE SEH 2J(L620) UL1007 (35V)
N001	3443231	SHIELD PLATE M1C TC-30
N403	3446863	S HEAT SINK (M1-K) AL
N620	3446862	VERTICAL HEAT SINK A3LXU3
N701A	4243445	G51 INSULATION WASHER PL-11T
N702	3445542	H.HEAT SINK HY09 A11DOP-H2
N702A	4514061	SCREW FLANGED 3*12
N702B	8821234	NUT-3
N702C	8813124	SPRING WASHER-3
N702D	4284311	2000 EARTH PIN
N702E	4159411	SCREW 3*8 KNURLED TAPPING SWRM
N706	4276993	VERTICAL HEAT SINK
N70A	4276993	VERTICAL HEAT SINK
N752	3445563	HEAT SINK A3LXU3
N901	3446873	POWER HEAT SINK 35V (35V)
N901	3446871	POWER HEAT SINK A3LXU3 (32V)
N901D	2787531	MICA SHEET
N910	4107502	PWB METAL R (A3) TC-30
N912	4107512	A3LXU3 PWB METAL TC-30
NC901	2784342	CONDENSER COVER
NE901	3772201	AC CORD HOLDER NYLON
P301	2959053	5P POST PIN 4P TYPE PH
P3S	2902264	PLUG PIN SUB MINI 5P
P65A	2675583	PLUG.JL-BT-E-5P
P66A	2675583	PLUG.JL-BT-E-5P
P901	2782611	CENTER PIN
P902	2782611	CENTER PIN
PFJ	2902266	PLUG PIN SUB MINI 7P (35V)
PFV	2902265	PLUG PIN SUB MINI 6P (35V)

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
PG	2902261	PLUGPIN SUB MINI 2P (35V)
PM	2665272	4P PLUG PIN WITH BASE
PSL	2902262	PLUG PIN SUB MINI 3P
PSR	2902263	PLUG PIN SUB MINI 4P
PW	2661753	4P PLUG PIN WITH BASE
PYNR	2675585	PLUG PIN JL-BT-E 7P (35V)
		CPT PWB MISCELLANEOUS PARTS
E3S	2976691	CONN. W/WIRE SEH 5J (L300)
E851	2953344	CPT SOCKET
⚠JSIN	2983122	S-SOCKET
N854	4348493	CPT HEAT SINK A2LXU3 (35V)
N855	4348493	CPT HEAT SINK A2LXU3 (35V)
N856	4348493	CPT HEAT SINK A2LXU3 (35V)
P31	2663131	2P PLUG PIN WITH BASE
P65B	2675563	PLUG JL-F-E-5P
P66B	2675563	PLUG JL-F-E-5P
P801	2902267	PLUG PIN SUB MINI 8P
P802	2902263	PLUG PIN SUB MINI 4P
		PINP PWB MISCELLANEOUS PARTS
EA01	2974231S	CONN. W/WIRE SEH 9J L60 (C-B)
EA02	2974201S	CONN. W/WIRE SEH 8J L60 (C-B)
NA01	MD01161	M3 PIP SHIELD CASE A
NA02	MD01171	M3 PIP SHIELD CASE B
PA01	2902248	PLUG PIN SUB MINI9P
PA02	2902247	PLUG PIN SUB MINI 8P
P001	2675287	PLUG PIN (PH 8P)
P301	2902252	12P PLUG PIN
ZA01	3787482	PCB HOLDER (16L)
		35V CONTROL PWB MISCELLANEOUS PARTS
JFV	EF01511	CONN.W/WIRE EH C-C 11J-6J L430 (35V)
J01	2983116	3P PIN JACK S.TERMINAL (35V)
PFJ	2902246	PLUG PIN SUB MINI 7P (35V)
PFV	2902251	11P PLUG PIN (35V)
		35V MAG. FIELD PWB MISCELLANEOUS PARTS
EY02	2956485	CONNECTOR CO-01C-A—471 (35V)
PG2	2902241	PLUG PIN SUB MINI 2P (35V)
PG3	2661942	3P PLUG PIN WITH L TYPE (35V)
PY01	2675565	PLUG PIN JL-F-E 7P (35V)
PY02	2661756	1P PLUG PIN WITH BASE (35V)
		COMPLETE CTV ASSEMBLY PARTS
		INSTRUCTION BOOK
N201	QR05931	A3LXU3 INSTRUCTION BOOK (ENGLISH)
N201	QR05941	A3LXU3 INSTRUCTION BOOK (FRENCH)
		OWNERS ASSEMBLY PARTS
E203	2784243	DRY BATTERY SUM-3 (G)
N202	H461705	WARRANTY CARD (E) 20V ~ 35V
N209	H461901	HITACHI EXT. SVC CARD
N302	4712247	CUSTOMER REGISTRATION CARD (CTV)
		ACCESSORY ASSEMBLY PARTS **REMOTE CONTROLS**
E301	HL00234	R/C-CLU-418U (35CX30B ONLY)
E301	HL00229	R/C-CLU-419UI
		SPEAKER PARTS
⚠SP451	GK00181	SPEAKER 4 OHM 5W (32CX11B/35CX30B)
⚠SP451	2412922	SP160 ROUND 4 OHM 5W (35TX88B/89K)
⚠SP451	2414872	SP100 ROUND 4 OHM 5W (32TX78B/79K)
⚠SP452	GK00181	SPEAKER 4 OHM 5W (32CX11B/35CX30B)
⚠SP452	2412922	SP160 ROUND 4 OHM 5W (35TX88B/89K)
⚠SP452	2414872	SP100 ROUND 4 OHM 5W (32TX78B/79K)
⚠SP453	2414943	SP50 ROUND 4 OHM 3W (35TX88B/89K)
⚠SP454	2414943	SP50 ROUND 4 OHM 3W (35TX88B/89K)
		SPEAKER WIRING ASSEMBLY PARTS
C4501	0258616	EL 2.2UF-M 50V (35TX88B/89K)
C4502	0258616	EL 2.2UF-M 50V (35TX88B/89K)
JSL	2976751	CONN. W/WIRE EH 3J (L620) (32CX11B/35CX30B)
JSL	2976754	3J CONN W/W (35TX88B/89K)
JSL	2976754	3J CONN W/W (32TX78B/79K)
JSR	2976761	CONN. W/WIRE EH 4J (L680) (32CX11B/35CX30B)
JSR	2976764	4J CONN W/WIRE (35TX88B/89K)
JSR	2976764	4J CONN W/WIRE (32TX78B/79K)
N101	0544510	TERMINAL PIECE (32CX11B/35CX30B/35TX88B/89K)
N102	EK00011	LEAD WIRE UL1007-24 (35TX88B/89K)
N103	EK00012	LEAD WIRE UL1007 AWG24 PINK (35TX88B/89K)
		CPT PARTS
⚠V1	DE00961	CPT A80LJF30X (32V)
⚠V1	2471593	CPT A89AEJ15X01 (35V)
		DEFLECTION YOKE PARTS
⚠E601	BY00511	DEFLECTION YOKE(MURATA) (32V)
		CPT SUB ASSEMBLY PARTS
E602	2994511	CRT EARTH WIRE (32V)
E602	2908402	CRT EARTH WIRE (35V)
E603	2771461	EDGE MAGNET (32V)
E603	GX00131	MAGNET-CHEVRON FUNNEL (35V)
E604	2773672	CF-MAGNET (32V)
JM	2665293	6P MINI CONN LEAD (35V)
⚠L905	2229022	DEGAUSSING COIL (32V)
⚠L970	2229023	DEGAUSSING COIL (35V)
LMFC	BZ00411	COIL M.F.COIL (35V)
N601	4615641	WEDGE (32V)
N606	3330941	EARTH SPRING (32V)
N606	3333922	EARTH SPRING (35V)
N610	2772981	FERRITE SHEET ASS'Y
N611	2772211	MAGNETIC PIECE (32V)
N612	2956801	EARTH RING (32V)
N612	H420831	HOOK (35V)
N613	4621186	CUSHION 2908 (35V)

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION
		FINAL/CABINET ASSEMBLY PARTS
		32CX11B FINAL ASSEMBLY PARTS
#010	H920182	VELCRO (32CX11B)
#150	QD00265	FRAME (32CX11B)
#200	PH03841	DOOR (32CX11B)
#225	3875771	LATCH 4T02 NYLON (32CX11B)
#250	3487425	HITACHI BADGE (32CX11B)
#300	H310885	R/C LENS (32CX11B)
#400	PH00911	INDOOR PLATE (32CX11B)
#521	3164048	BACKCOVER (32CX11B)
#530	8440444	SP HIMERON C29-BV20
#601	3727972	POWER CORD HANGER
#680	H461171	PATENT AND TELESONICS LABEL
#900	PC00345	BUTTONS
N105	3705232	ANODE CLAMPER 94V0
N120	4690171	CAUTION LABEL C (F)
N401	QN01007	SERVICEMAN WARNING LABEL A(E)
N401	QN01017	SERVICEMAN WARNING LABEL A(F)
		32TX78B/79K FINAL/CABINET ASSEMBLY PARTS
#006	3827633	IN-DOOR PLATE L (32TX78B/79K)
#022	H920181	VELCRO
#032	H840011	GLIDE PIN
#040	3103046	FRAME (32TX78B/79K)
#064	PH02502	INDOOR PLATE R (32TX78B/79K)
#095	H520262	TERMINAL COVER (32TX78B/79K)
#113	PH01421	DOOR (32TX78B/79K)
#114A	3785043	D40 PUSHLOCK A (32TX78B/79K)
#119A	3209062	R/C PANEL (32TX78B/79K)
#119B	3826142	LED LENS (32TX78B/79K)
#124A	3487421	HITACHI BADGE 55 (S) PS
#126	3209103	FRONT PANEL (R) (32TX78B/79K)
#127	3209104	FRONT PANEL (L) (32TX78B/79K)
#130	H410311	MAGNETIC LOU
#202	3871591	CPT BRACKET 3190 (A) NORYL
#204	3871592	CPT BRACKET 3190 (B) NORYL
#211	NT00803	CHASSIS RAIL (32TX78B/79K)
#214	NT00804	CHASSIS RAIL 27500-B (32TX78B/79K) PS
#400	84000002	METAL CATCH 1
#405	3871481	SUPPORT REAR BOARD (32TX78B/79K)
#420	84000003	METAL CATCH
#440	63066861	FLIPPER DOOR SLIDE
#480	61020001	DUOMATIC HINGE
#500	61030001	DUOMATIC MOUNTING PLATE
#501	H520181	CHASSIS STOPPER (32TX78B/79K)
#602	3163102	PROTECTER (32TX78B/79K)
#603	H520252	BACKBOARD (32TX78B/79K) HARDBOARD
#606	H461171	PATENT AND TELESONICS LABEL
#650	3727972	POWER CORD HANGER
#660	H310122	PLASTIC RIVET
N105	3705232	ANODE CLAMPER 94V0 (101)
N120	4690171	CAUTION LABEL C (F)
N401	QN01007	SERVICEMAN WARNING LABEL A(E)
N401	QN01017	SERVICEMAN WARNING LABEL A(F)
		35CX30B FINAL/CABINET ASSEMBLY PARTS
#086	H920131	THREE BOND TB1521 1KG CAN (35CX30B)
#100	4326625	CT3170 EVER TIGHT BOLT (L) (35CX30B)
#103	H420631	FRAME SUPPORT BRACKET (35CX30B)
#110	3707943	INSULATOR FOOT (35CX30B)
#111	4107241	SUPPORT METAL AV JACK SECC 20/ (35CX30B)
#145	3768982	BC STOPPER (35CX30B)
#160	3742021	CABINET WIRE CLAMPER (35CX30B)
#180	NT00803	CHASSIS RAIL 27500-A (35CX30B) PS
#180	NT00804	CHASSIS RAIL 27500-B (35CX30B) PS
#250	3727972	POWER CORD HANGER (35CX30B)
#260	3874421	BRACKET (35CX30B)
#260	4778201	LABEL BASE (35CX30B) PVC
#261	4778202	LABEL BASE (35CX30B) PVC (CANADA)
#269	3756631	PLASTIC RIVET
#284	3487425	HITACHI BADGE (35CX30B)
#293A	H390041	HIMERON SHEET 85X10
#293B	H390051	BUTTON CUSHION
#294	4733887H	HIMERON 3170 (35CX30B)
#299	H390043	HIMERON SHEET 740X10 (35CX30B)
N108	3705232	ANODE CLAMPER 94V0
N120	4690171	CAUTION LABEL C (F)
N401	QN00325	SERVICEMAN WARNING LABEL A (35V)(E)
N401	QN00335	SERVICEMAN WARNING LABEL A (35V)(F)
		35TX88B/89K FINAL/CABINET ASSEMBLY PARTS
#013	H410311	MAGNETIC LOU
#020	H840011	GLIDE PIN
#100	4326625	CT3170 EVER TIGHT BOLT (L) SWCH18A
#103	H420631	FRAME SUPPORT BRACKET
#111	4107241	SUPPORT METAL AV JACK SECC 20/
#116	NT00803	CHASSIS RAIL 27500-A (35TX88B/89K) PS
#117	NT00804	CHASSIS RAIL 27500-B (35TX88B/89K) PS
#130	4492661	CHASSIS FIXING METAL (F) SECC
#145	3768982	BC STOPPER N
#151	H830071	WASHER 1/4 FLAT
#250	3727972	POWER CORD HANGER
#260	3874421	BRACKET PS
#283	3273872	BUTTON (35TX88B/89K)
#284	3487425	HITACHI BADGE (35TX88B/89K)
#285	3204184	R/C LENS (35TX88B/89K)
#286B	PH01061	DECO PANEL R (35TX88B/89K)
#287B	PH01062	DECO PANEL L (35TX88B/89K)
#288B	3828164	INDOOR PLATE (35TX88B/89K) PC
#293	3798068H	BUTTON CUSHION
#296	3106403	FRONT FRAME (35TX88B/89K)
#297B	3821953	DOOR (35TX88B/89K) PS
#298	3875771	LATCH 4T02 NYLON
#400	H310613	TERMINAL BLOCK WEDGE
#400	84000002	METAL CATCH 1
#405A	3871481	SUPPORT REAR BOARD PVC
#410	4107241	SUPPORT METAL AV JACK SECC 20/
#420	84000003	METAL CATCH
#440	63066861	FLIPPER DOOR SLIDE
#460	63068861	PIVOT ROLLER
#480	61020001	DUOMATIC HINGE
#500	61030001	DUOMATIC MOUNTING PLATE
#505	H320001	PCB SUPPORT SPACER
#602	3163103	CPT PROTECTOR CUP
#603	H512164	BACKBOARD ASSEMBLY (35TX88B/89K)

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

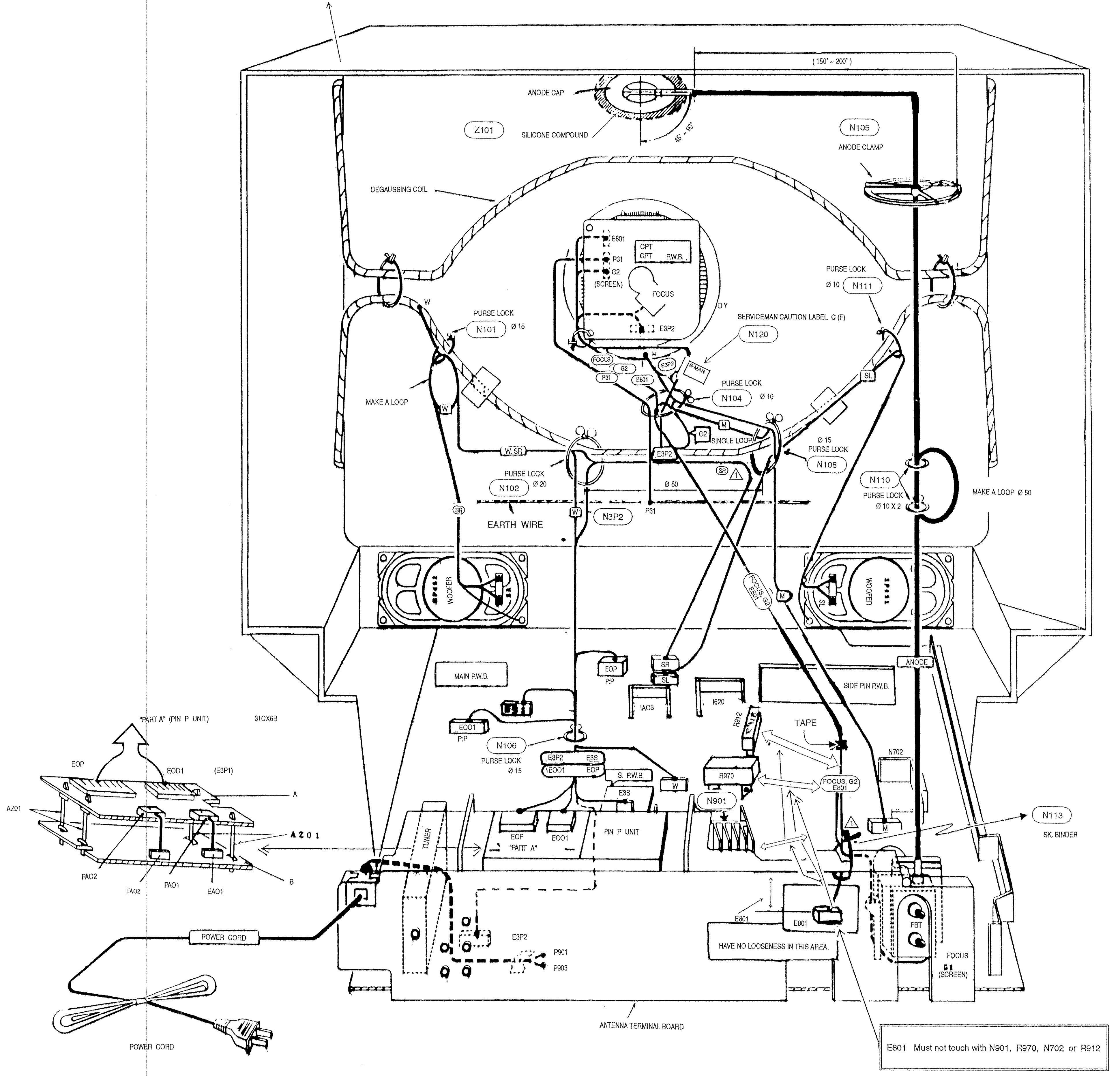
SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
#608	H520365	REAR BOARD (35TX88B/89K)			
#621	H512202	TERMINAL BLOCK SPACER			
#625	35200030	VERTICAL SUPPORT			
#660	H310121	PLASTIC RIVET			
N108	3705232	ANODE CLAMPER 94V0			
N120	4690171	CAUTION LABEL C (F)			
N401	QN00325	SERVICEMAN WARNING LABEL A (35V)(E)			
N401	QN00335	SERVICEMAN WARNING LABEL A (35V)(F)			
		PACKING ASSEMBLY PARTS			
#011	H361003	CARTON BOX (32CX11B)			
#011	H360985	CARTON BOX (35CX30B)			
#011	3548797	CARTON BOX (32TX78B/79K)			
#013	H360914	CARTON BOX (5TX88B/89K)			
#021	H370562	BOTTOM PAD (32TX78B/79K)			
#021	H370572	TOP PAD (32TX78B/79K)			
#021	H360112	BOTTOM PAD (35TX88B/89K)			
#025	H361021	TOP CUSHION (32CX11B)			
#026	H361031	BOTTOM CUSHION (32CX11B)			
#028A	H370552	BOTTOM TRAY BLANK (32TX78B/79K)			
#029A	H370386	TOP TRAY BLANK (32TX78B/79K)			
#031	H360703	TOP TRAY (35TX88B/89K)			
#052	H462002	MODEL NAME LABEL (32CX11B)-511			
#100	H370458	TRAY BLANK BOTTOM (35TX88B/89K)			
#110	H370459	TRAY BLANK TOP (35TX88B/89K)			

NOTES

NOTES

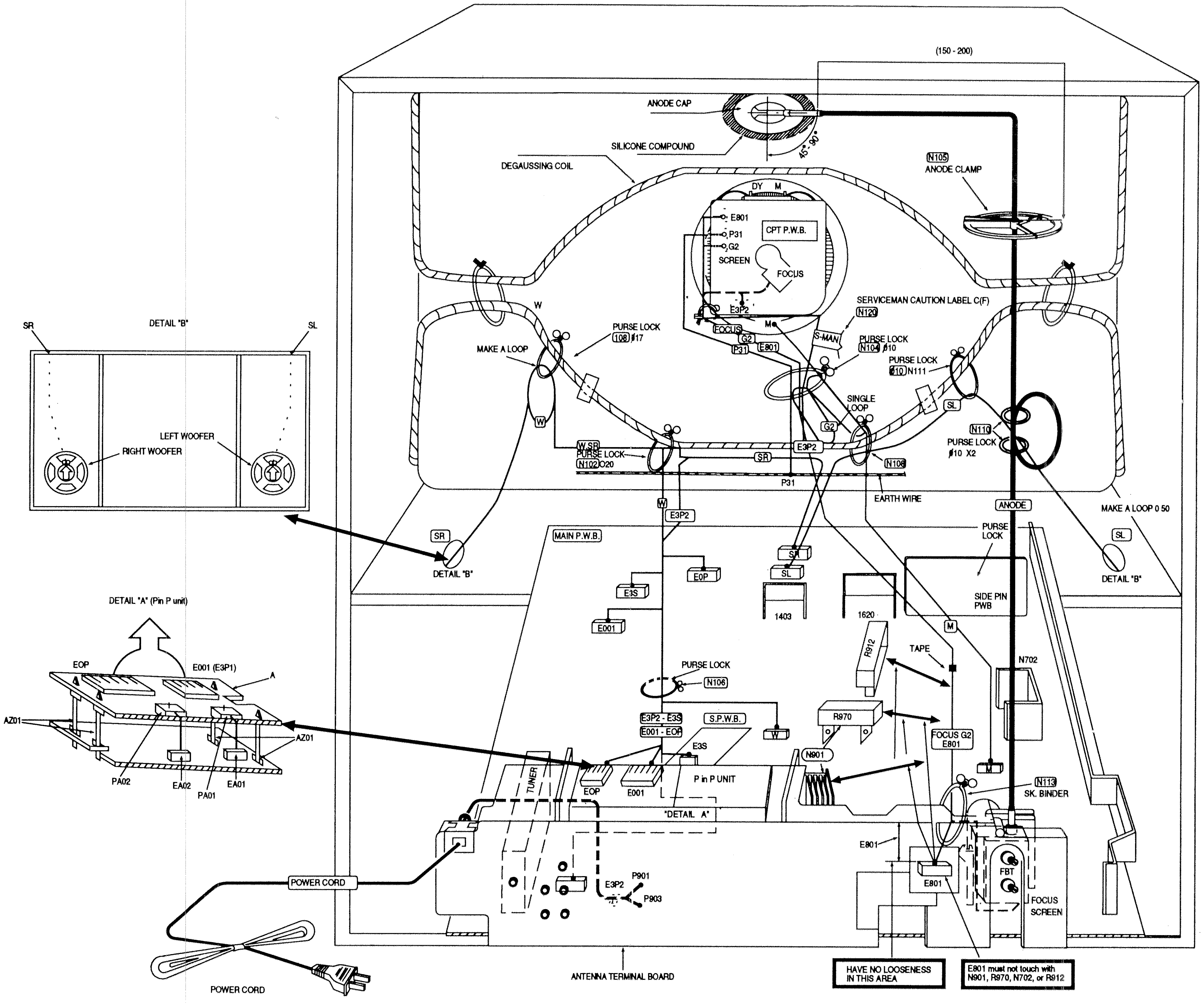
NOTES

WIRING DRAWING OF 32CX11B/CY61 FINAL ASSEMBLY


(150° ~ 200°)
ANODE CAP
SILICONE COMPOUND
45° ~ 90°
Z101
N105
ANODE CLAMP
DEGAUSSING COIL
E801
P31
G2
(SCREEN)
CPT
CPT P.W.B.
FOCUS
DY
E3P2
PURSE LOCK
Ø 10
N111
SERVICEMAN CAUTION LABEL C (F)
N120
PURSE LOCK
N101
Ø 15
W
MAKE A LOOP
W
FOCUS
G2
P31
E801
E3P2
S-MAN
M
PURSE LOCK
N104
Ø 10
SL
G2
M
SINGLE LOOP
Ø 15
PURSE LOCK
N108
W. SR
E3P2
SR
1
PURSE LOCK
N102
Ø 20
Ø 50
N110
PURSE LOCK
Ø 10 X 2
MAKE A LOOP Ø 50
SR
W
N3P2
P31
EARTH WIRE
SP452
WOOFER
SR
FOCUS, G2
E801
M
SL
WOOFER
SP451
MAIN P.W.B.
EOP
P.P
SR
SL
IA03
I620
ANODE
SIDE PIN P.W.B.
"PART A" (PIN P UNIT)
31CX6B
E001
P.P
N106
PURSE LOCK
Ø 15
R912
TAPE
N702
EOP
E001
(E3P1)
A
E3P2
E3S
E001
EOP
S. P.W.B.
W
R970
FOCUS, G2
E801
E3S
N901
N113
SK. BINDER
1
M
AZ01
AZ01
TUNER
EOP
"PART A"
E001
PIN P UNIT
PA02
EA02
PA01
EA01
B
E801
E801
FBT
HAVE NO LOOSENESS IN THIS AREA.
E3P2
P901
P903
FOCUS
G2
(SCREEN)
POWER CORD
POWER CORD
ANTENNA TERMINAL BOARD

E801 Must not touch with N901, R970, N702 or R912

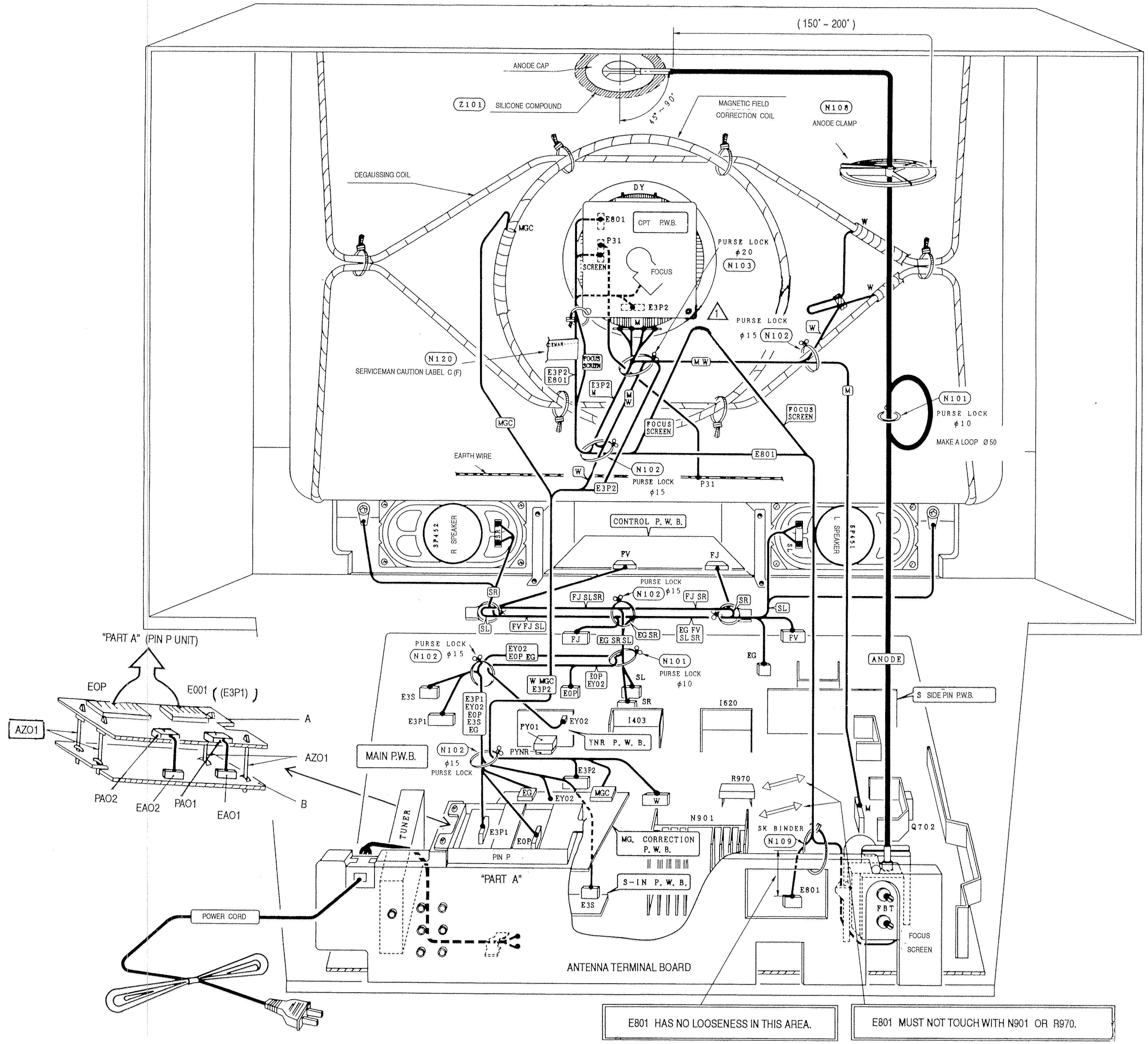
WIRING DRAWING OF 32TX78B, 32TX79K/CY60 FINAL ASSEMBLY


(150 - 200)
ANODE CAP
SILICONE COMPOUND
45°-90°
DEGAUSSING COIL
N105
ANODE CLAMP
DY M
E801
P31
G2
SCREEN
CPT P.W.B.
FOCUS
E3P2
SERVICEMAN CAUTION LABEL C(F)
N120
S-MAN
W
PURSE LOCK
108 ∅17
MAKE A LOOP
FOCUS
G2
P31
E801
M
PURSE LOCK
N104 ∅10
PURSE LOCK
∅10 N111
SINGLE LOOP
G2
SL
N110
PURSE LOCK
∅10 X2
W
W.SR
PURSE LOCK
N102 O20
E3P2
SR
N108
P31
EARTH WIRE
W
E3P2
ANODE
MAKE A LOOP 0 50
SR
MAIN P.W.B.
PURSE LOCK
SL
DETAIL "B"
SR
SL
EOP
E3S
E001
1403
1620
SIDE PIN PWB
DETAIL "B"
M
R912
TAPE
N702
PURSE LOCK
N106
E3P2 - E3S
E001 - EOP
S.P.W.B.
W
R970
FOCUS G2
E801
N901
E3S
M
N113
SK. BINDER
TUNER
EOP
E001
P in P UNIT
"DETAIL A"
E801
E801
FBT
FOCUS
SCREEN
E3P2
P901
P903
POWER CORD
POWER CORD
ANTENNA TERMINAL BOARD
SR
DETAIL "B"
SL
LEFT WOOFER
RIGHT WOOFER
DETAIL "A" (Pin P unit)
EOP
E001 (E3P1)
A
AZ01
AZ01
PA02
EA02
PA01
EA01

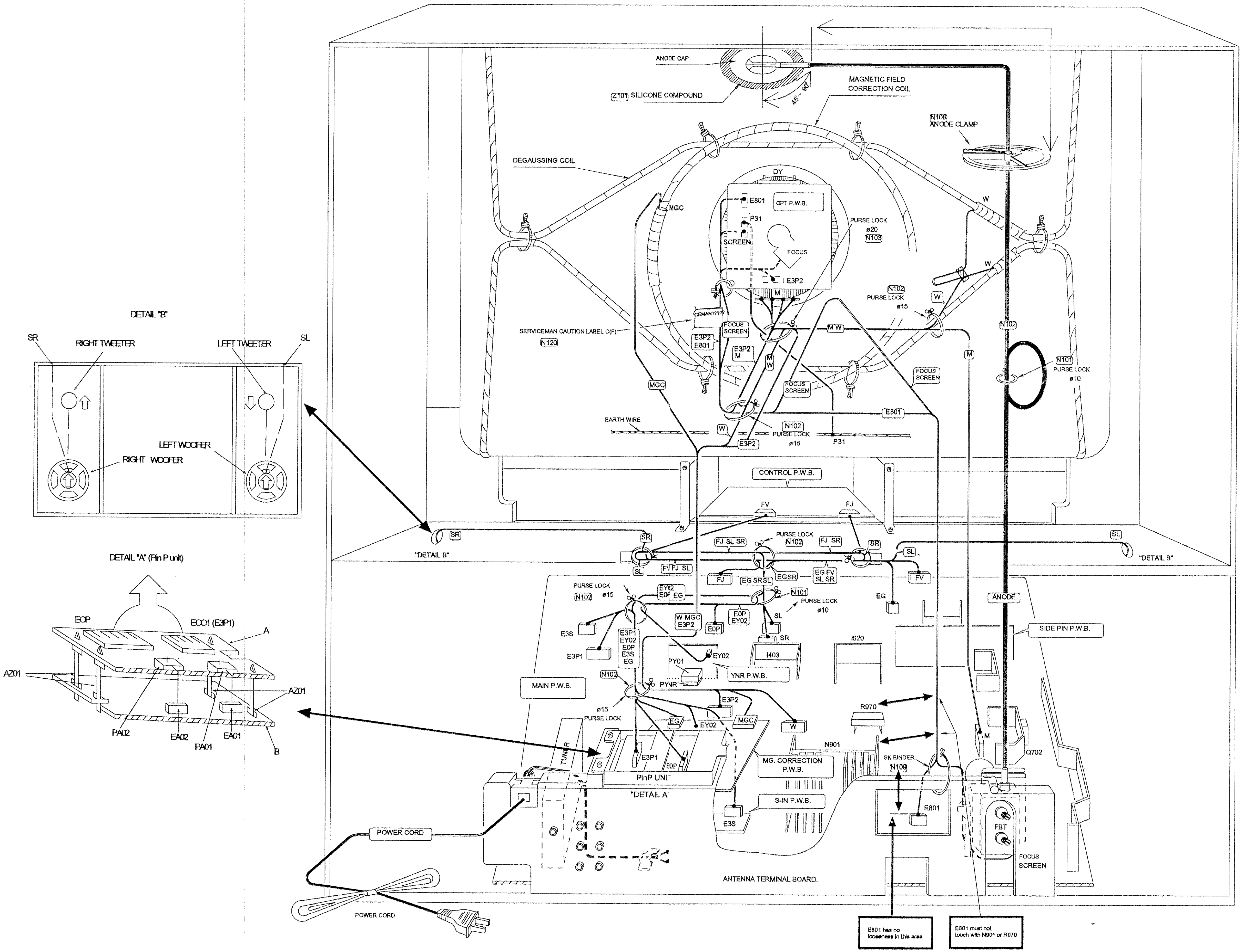
HAVE NO LOOSENESS IN THIS AREA

E801 must not touch with N901, R970, N702, or R912

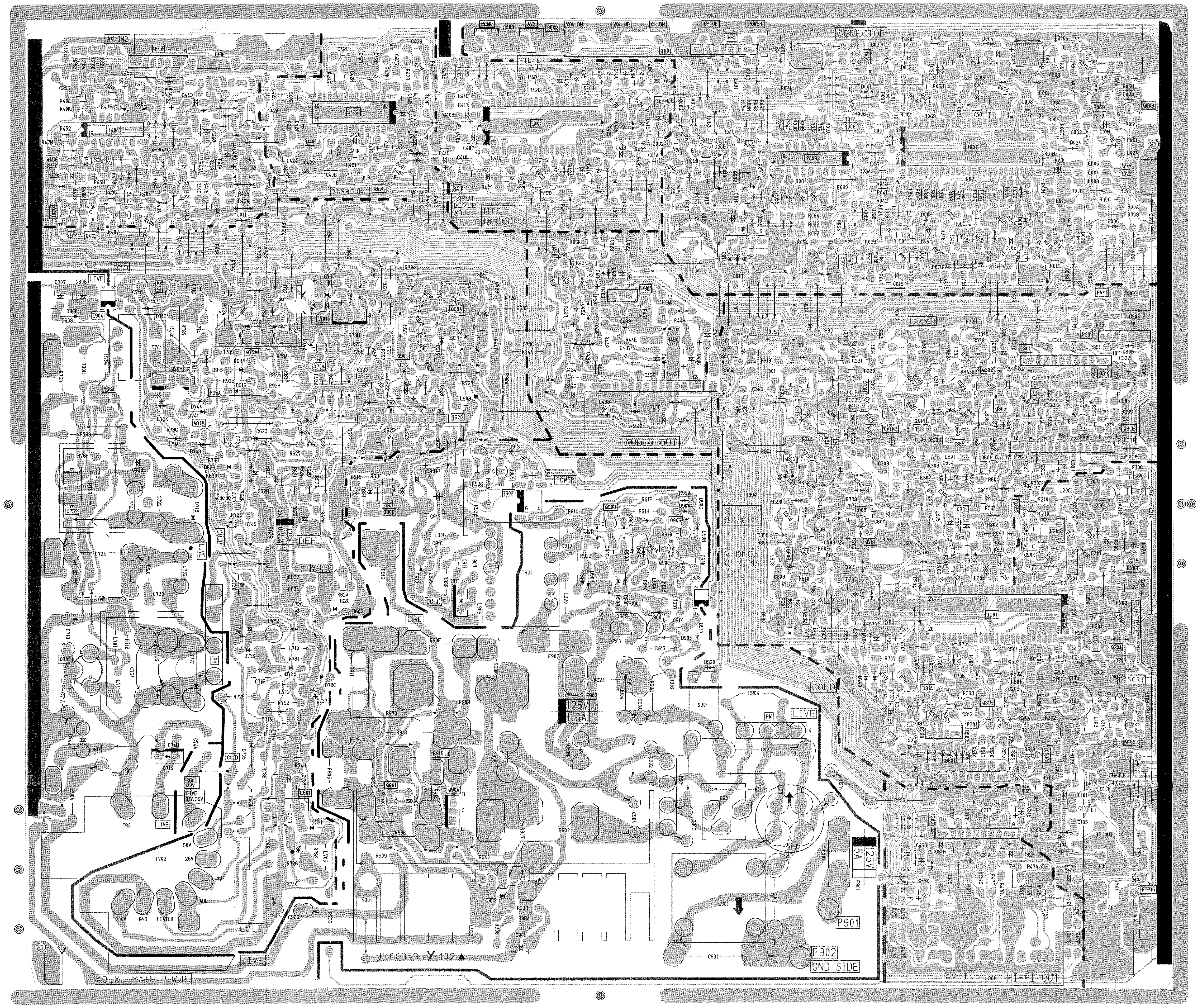
WIRING DRAWING OF 35CX30B/CZ63 FINAL ASSEMBLY


(150˚ ~ 200˚)
ANODE CAP
Z101 SILICONE COMPOUND
45˚ ~ 90˚
MAGNETIC FIELD CORRECTION COIL
N108 ANODE CLAMP
DEGAUSSING COIL
DY
E801
CPT P.W.B.
P31
SCREEN
FOCUS
E3P2
MGC
PURSE LOCK ϕ20 N103
PURSE LOCK ϕ15 N102
W
N120 SERVICEMAN CAUTION LABEL C (F)
FOCUS SCREEN
E3P2 E801
E3P2 M
M W
FOCUS SCREEN
M
N101 PURSE LOCK ϕ10
MAKE A LOOP Ø50
EARTH WIRE
E801
N102 PURSE LOCK ϕ15
E3P2
P31
SP452 R SPEAKER
SR
CONTROL P. W. B.
FV
FJ
SP451 L SPEAKER
SL
PURSE LOCK N102 ϕ15
FJ SL SR
FJ SR
SR
SL
FV FJ SL
FJ
EG SR SL
EG SR
EG FV SL SR
FV
EG
ANODE
"PART A" (PIN P UNIT)
PURSE LOCK N102 ϕ15
EY02 EOP EG
N101 PURSE LOCK ϕ10
EOP
E001 ((E3P1))
A
AZ01
AZ01
PA02
EA02
PA01
EA01
B
E3S
W MGC E3P2
EOP
EOP EY02
SL
SR
I620
S SIDE PIN P.W.B.
E3P1
E3P1 EY02 EOP E3S EG
PY01
EY02
I403
YNR P. W. B.
MAIN P.W.B.
N102 ϕ15 PURSE LOCK
PYNR
E3P2
R970
EG
EY02
MGC
W
N901
TUNER
E3P1
EOP
PIN P
MG. CORRECTION P. W. B.
SK BINDER N109
Q702
M
"PART A"
S-IN P. W. B.
E3S
E801
FBT
FOCUS
SCREEN
POWER CORD
ANTENNA TERMINAL BOARD
E801 HAS NO LOOSENESS IN THIS AREA.
E801 MUST NOT TOUCH WITH N901 OR R970.

WIRING DRAWING OF 35TX88B/35TX89K/CZ63 FINAL ASSEMBLY

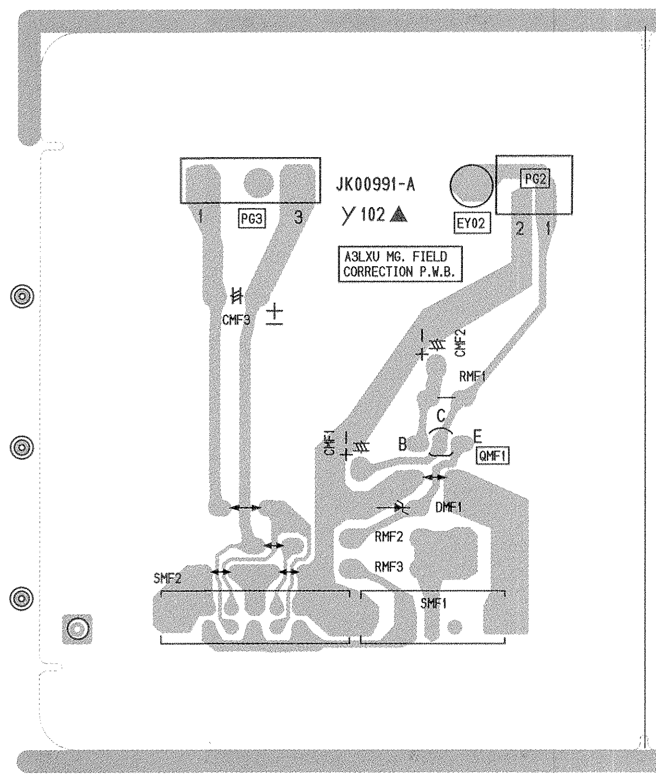

DETAIL "B"
SR
RIGHT TWEETER
LEFT TWEETER
SL
LEFT WOOFER
RIGHT WOOFER
DETAIL "A" (Pin P unit)
EOP
EC01 (E3P1)
A
AZ01
AZ01
PA02
EA02
PA01
EA01
B
ANODE CAP
Z101 SILICONE COMPOUND
45°-90°
MAGNETIC FIELD CORRECTION COIL
N108 ANODE CLAMP
DEGAUSSING COIL
DY
MGC
E801
CPT P.W.B.
P31
SCREEN
FOCUS
E3P2
PURSE LOCK ø20 N103
M
N102 PURSE LOCK ø15
W
SERVICEMAN CAUTION LABEL C(F) N120
FOCUS SCREEN
E3P2 E801
E3P2 M
M W
N102
N101 PURSE LOCK ø10
EARTH WIRE
N102 PURSE LOCK ø15
E3P2
P31
CONTROL P.W.B.
FV
FJ
SR
SL
"DETAIL B"
PURSE LOCK N102
FJ SL SR
FJ SR
FV FJ SL
FJ
EG SR SL
EGSR
EG FV SL SR
FV
EG
ANODE
SIDE PIN P.W.B.
PURSE LOCK N102 ø15
EY02 E0P EG
N101 PURSE LOCK ø10
W MGC E3P2
E0P
E0P EY02
E3S
E3P1
E3P1 EY02 E0P E3S EG
SR
I403
I620
PY01
EY02
YNR P.W.B.
MAIN P.W.B.
PYNR
ø15 PURSE LOCK
E3P2
EG
EY02
MGC
W
R970
N901
TUNER
E3P1
E0P
PinP UNIT
"DETAIL A"
MG. CORRECTION P.W.B.
SK BINDER N109
S-IN P.W.B.
E3S
E801
M
Q702
FBT
FOCUS SCREEN
POWER CORD
POWER CORD
ANTENNA TERMINAL BOARD.
E801 has no looseness in this area
E801 must not touch with N901 or R970

PRINTED WIRING BOARD FOIL PATTERN

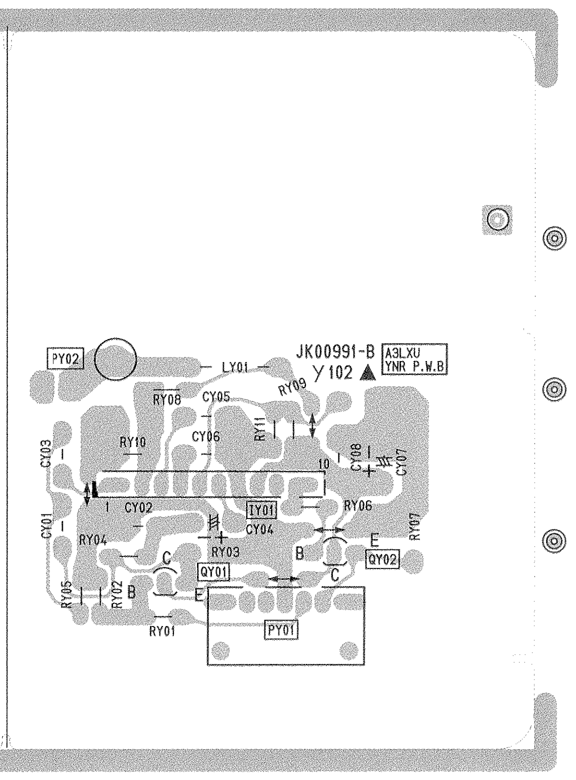


A3LXU3 MAIN P.W.B.

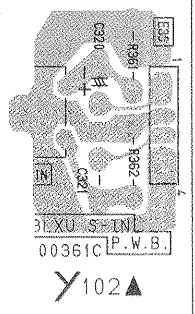
A3LXU3 MAG. FIELD CORRECTION P.W.B.



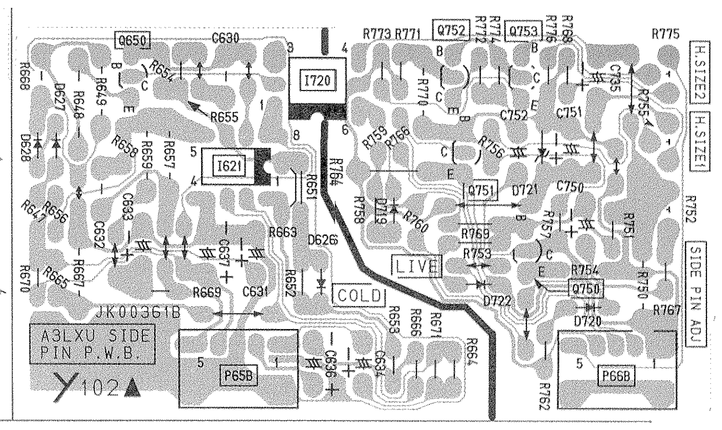
A3LXU3 YNR P.W.B.



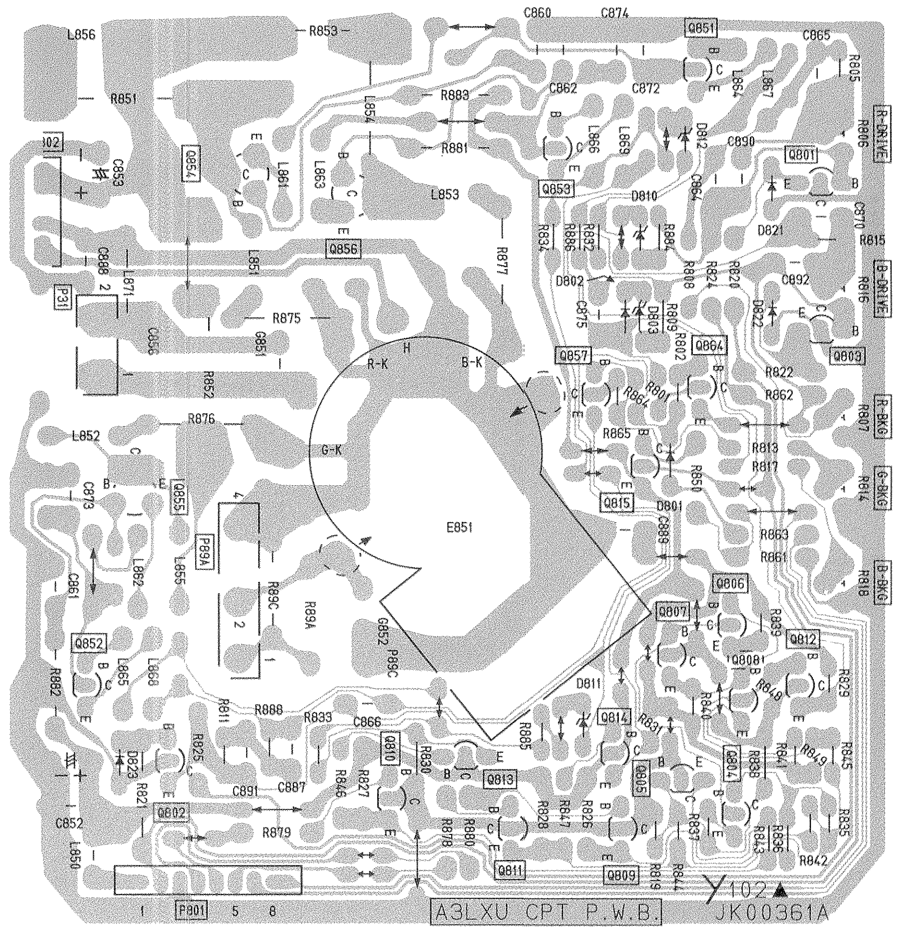
A3LXU3 S P.W.B.



A3LXU3 SIDE PIN P.W.B.

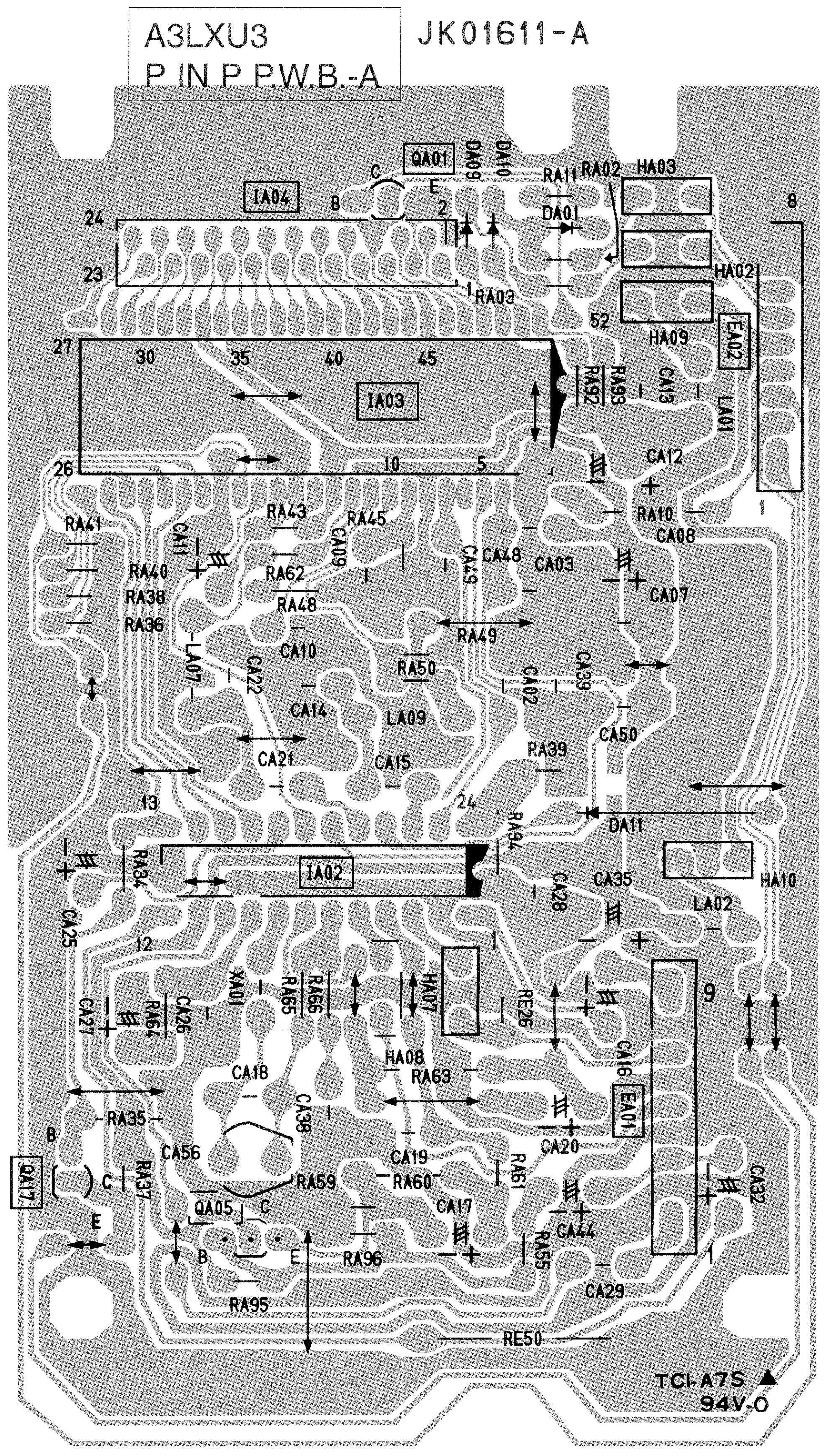


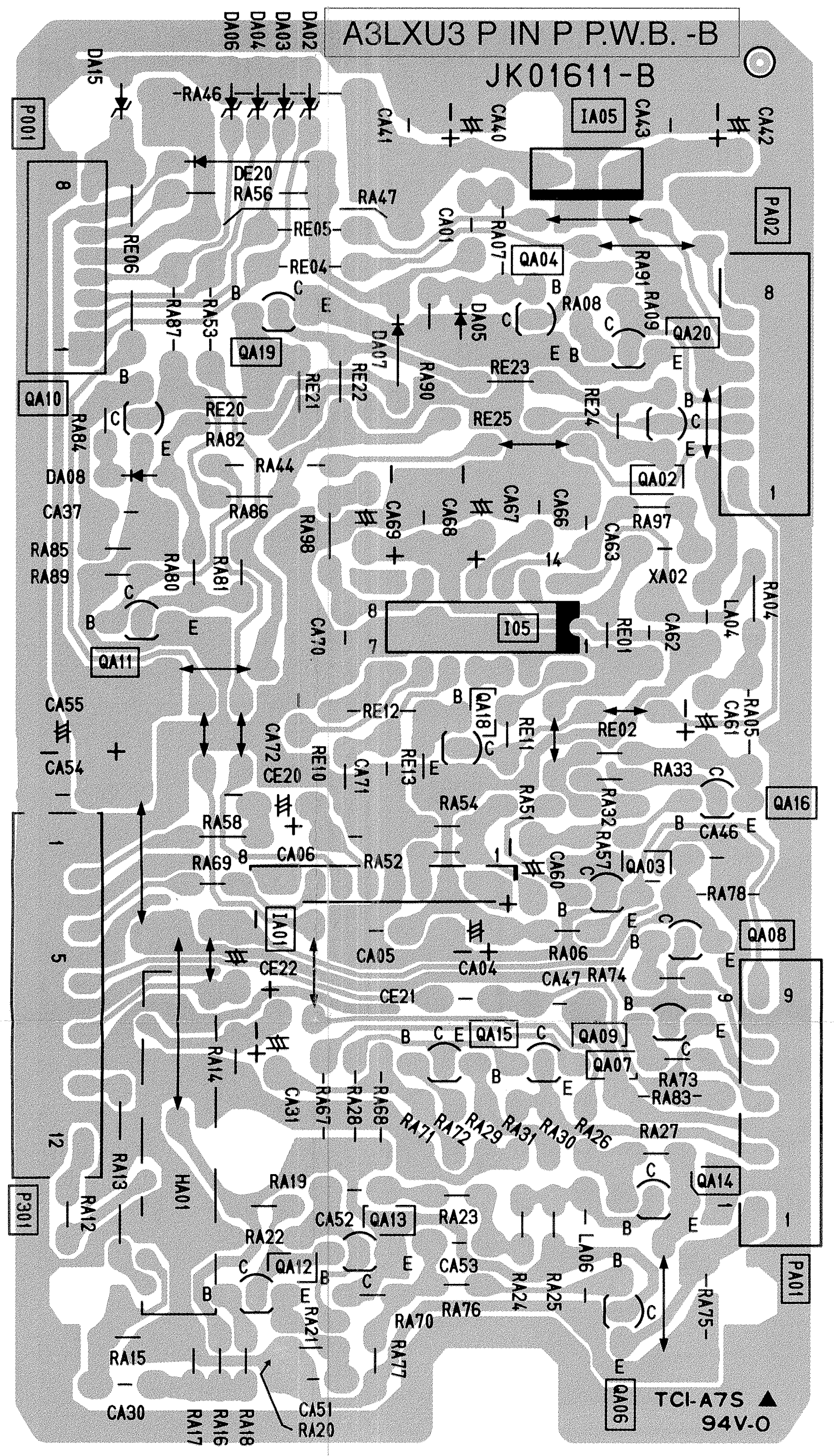
A3LXU3 C.P.T. P.W.B.

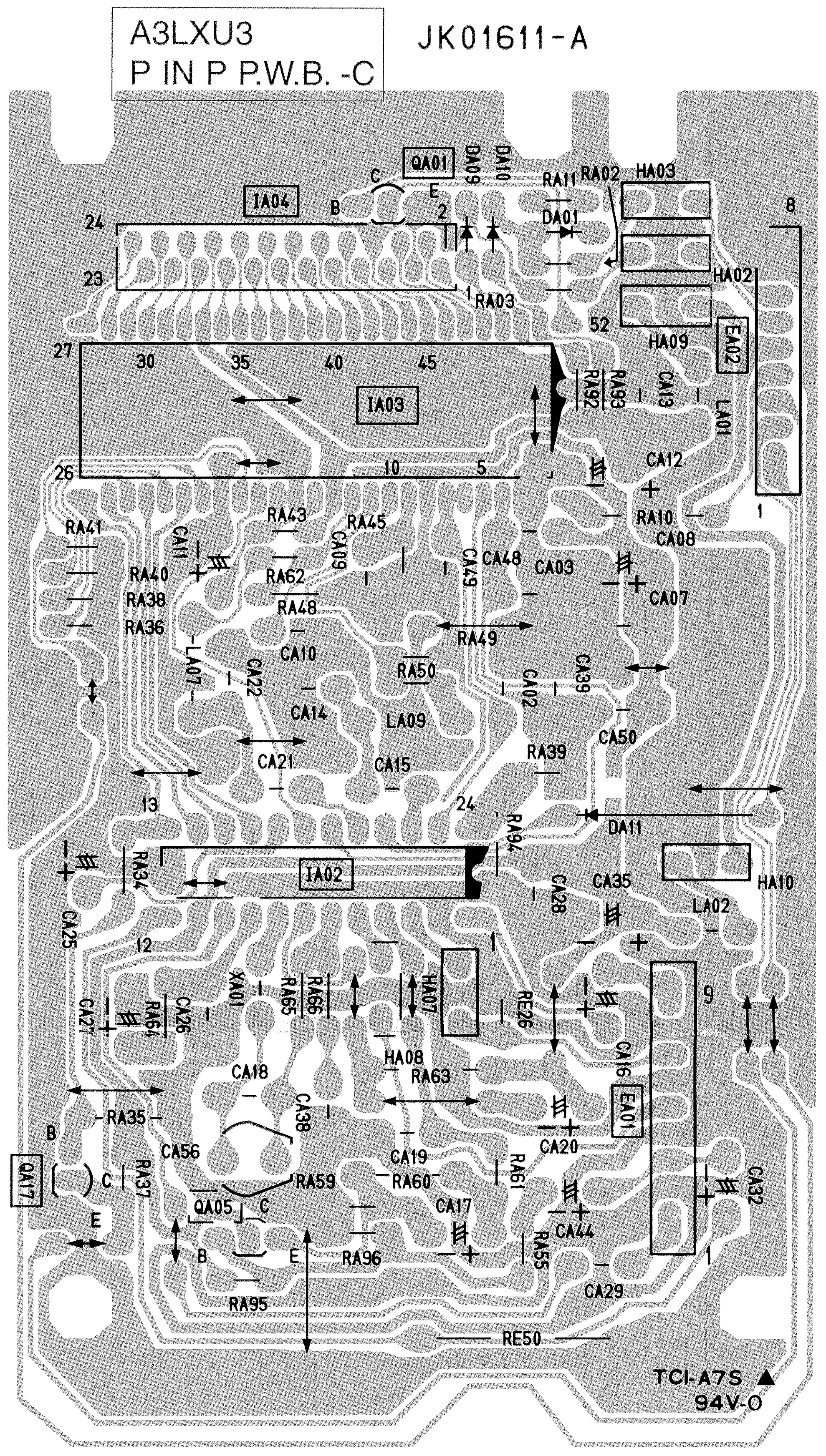


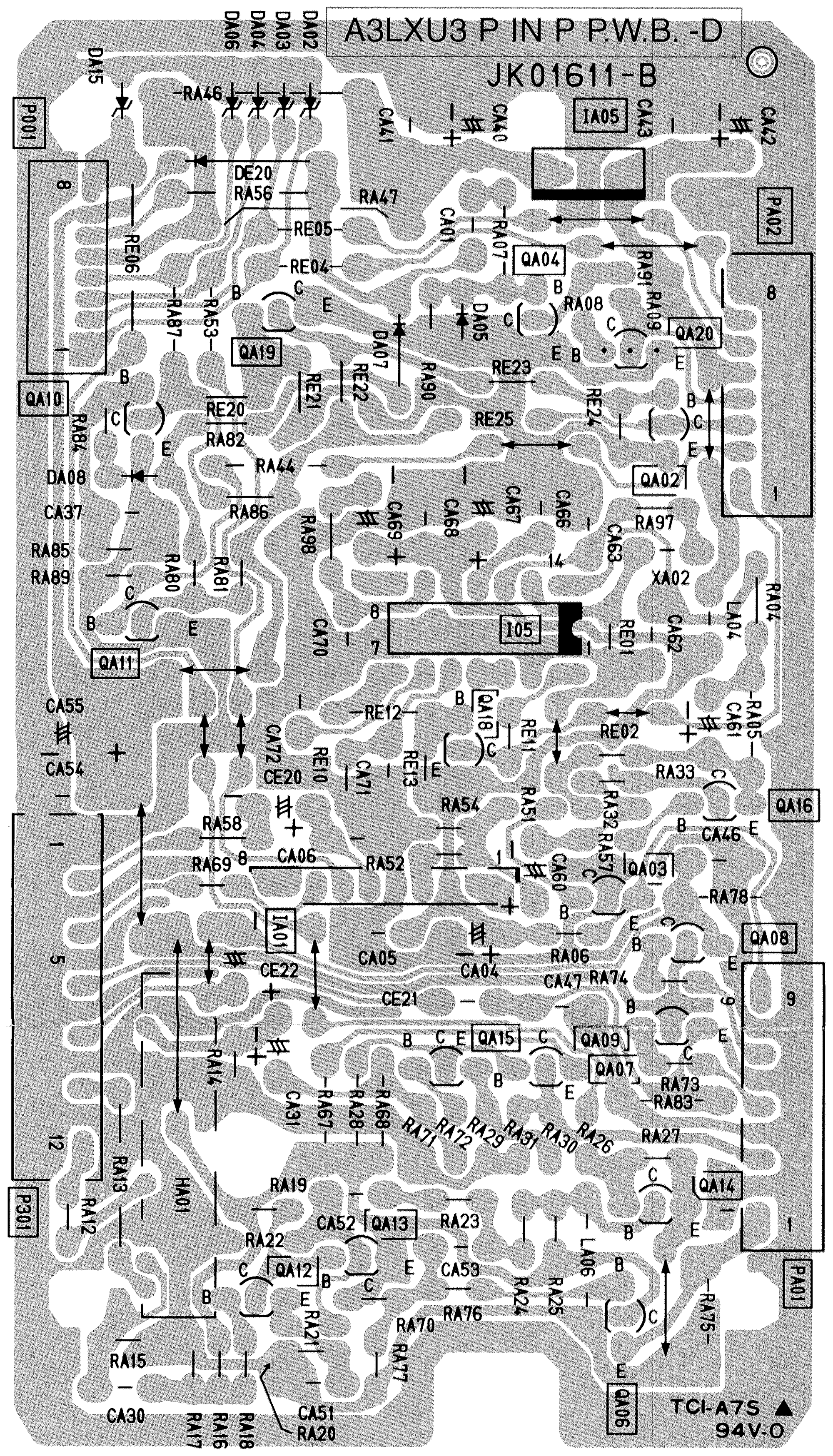
PRINTED WIRING BOARD FOIL PATTERN

A3LXU3 P in P P.W.B.


A3LXU3
P IN P P.W.B.-A
JK01611-A
TCI-A7S ▲
94V-0

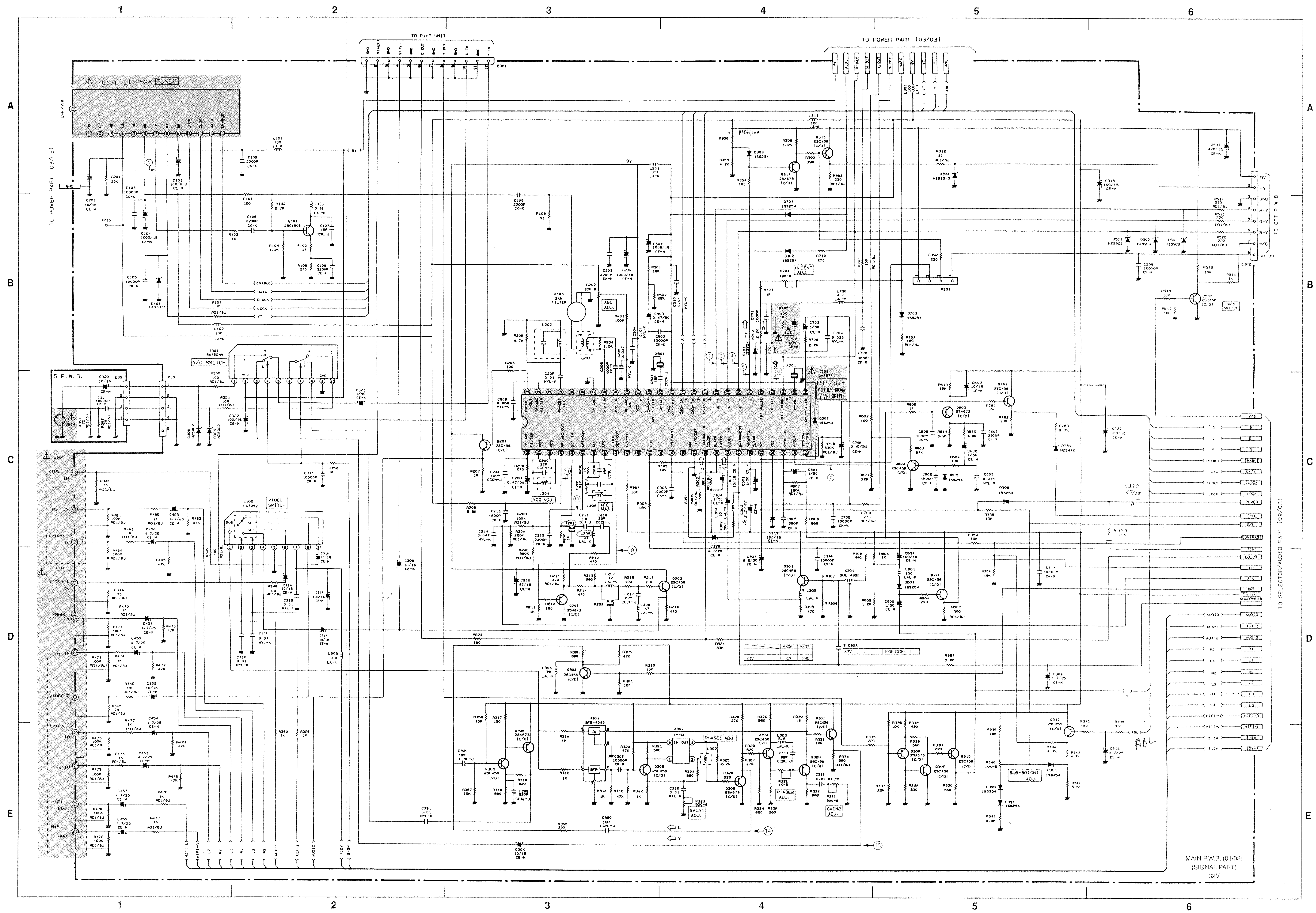

A3LXU3 P IN P P.W.B. -B
JK01611-B
TCI-A7S ▲
94V-0


A3LXU3
P IN P P.W.B. -C
JK01611-A
TCI-A7S ▲
94V-0


A3LXU3 P IN P P.W.B. -D
JK01611-B
TCI-A7S ▲
94V-0

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM 32CX11B/CY61, 32TX78B/CY60, 32TX79K/CY60


1
2
3
4
5
6
A
B
C
D
E
TO PinP UNIT
TO POWER PART (03/03)
U101 ET-352A TUNER
TO POWER PART (03/03)
TO CPT P.W.B.
S.P.W.B.
I301 BA7604N Y/C SWITCH
I302 LA7952 VIDEO SWITCH
I201 LA7674 PIF/SIF VIDEO/CHROMA Y/H. DRIVE
AGC ADJ.
H.CENT ADJ.
VCO ADJ.
PHASE1 ADJ.
PHASE2 ADJ.
GAIN1 ADJ.
GAIN2 ADJ.
SUB-BRIGHT ADJ.
H301 SFB-4242
TO SELECTOR/AUDIO PART (02/03)
VIDEO 3 IN
R3 IN
L/MONO 3 IN
VIDEO 1 IN
L/MONO IN
R1 IN
VIDEO 2 IN
L/MONO 2 IN
R2 IN
HIFI LOUT
HIFI ROUT
MAIN P.W.B. (01/03)
(SIGNAL PART)
32V

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5

Circuit No.	Pin No.	Voltage VDC
I201	29	7.0
	30	7.6
	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5

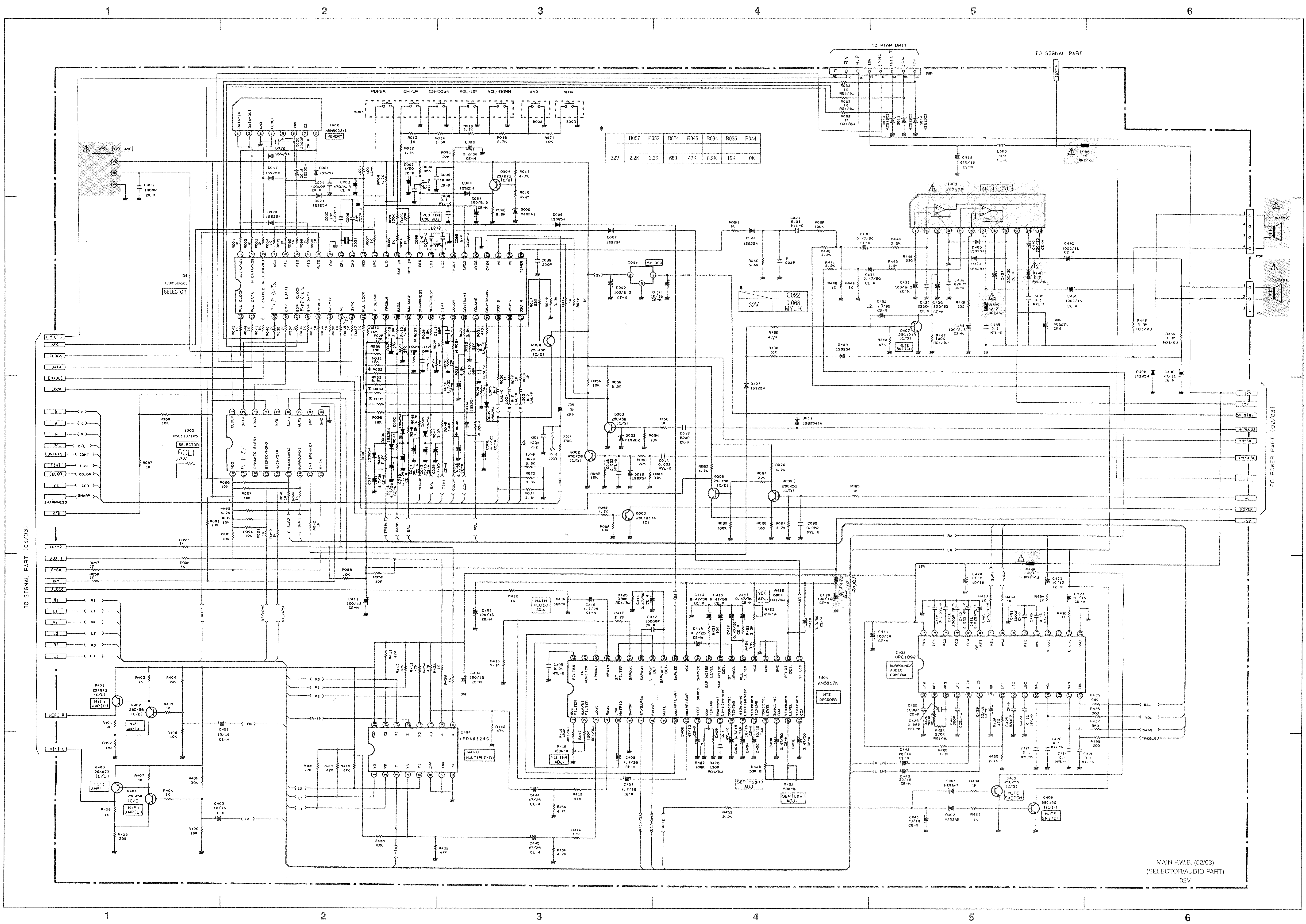
Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM 32CX11B/CY61, 32TX78B/CY61, 32TX79K/CY61


1
2
3
4
5
6
A
B
C
D
E
TO PinP UNIT
TO SIGNAL PART
POWER
CH-UP
CH-DOWN
VOL-UP
VOL-DOWN
AVX
MENU
I002 HD4B6021L
MEMORY
U001 R/C AMP
I001 LC864164B-5A78
SELECTOR
I003 HSC1137185
SELECTOR
I004 5V REG
VCO FOR OSD ADJ.
I403 AN7178
AUDIO OUT
SP451
SP452
TO POWER PART (02/03)
TO SIGNAL PART (01/03)
I404 uPD4052BC
AUDIO MULTIPLEXER
MAIN AUDIO ADJ.
FILTER ADJ.
VCO ADJ.
SEP(High) ADJ.
SEP(Low) ADJ.
I401 AN5817K
MTS DECODER
I402 uPC1892
SURROUND/AUDIO CONTROL
MUTE SWITCH
HIFI AMP(R)
HIFI AMP(L)
MAIN P.W.B. (02/03)
(SELECTOR/AUDIO PART)
32V

*

	R027	R032	R024	R045	R034	R035	R044
32V	2.2K	3.3K	680	47K	8.2K	15K	10K

*

	C022
32V	0.068 MYL-K

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I001	1	5.0
	2	5.0
	3	5.0
	4	5.0
	5	12mv
	6	12mv
	7	12mv
	8	-3mv
	9	0.0
	10	2.5
	11	2.5
	12	5.0
	13	2.2
	14	5.0
	15	0.5
	16	0.5
	17	5.0
	18	2.3
	19	2.3
	20	2.5
	21	5.0
	22	0.0
	23	3.0
	24	5.0
	25	4.2
	26	0.0
	27	0.0
	28	0.0

Circuit No.	Pin No.	Voltage VDC
I001	29	0.0
	30	0.0
	31	42mv
	32	7.0
	33	4.4
	34	3.0
	35	2.3
	36	4.1
	37	1.5
	38	1.8
	39	1.8
	40	47mv
	41	120mv
	42	85mv
	43	2.3
	44	5.0
	45	5.0
	46	5.0
	47	0.3
	48	2.5mv
	49	5mv
	50	180mv
	51	5.0
	52	5.0

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	—
	17	—
	18	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0

Circuit No.	Pin No.	Voltage VDC
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	—
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0
	29	3.0

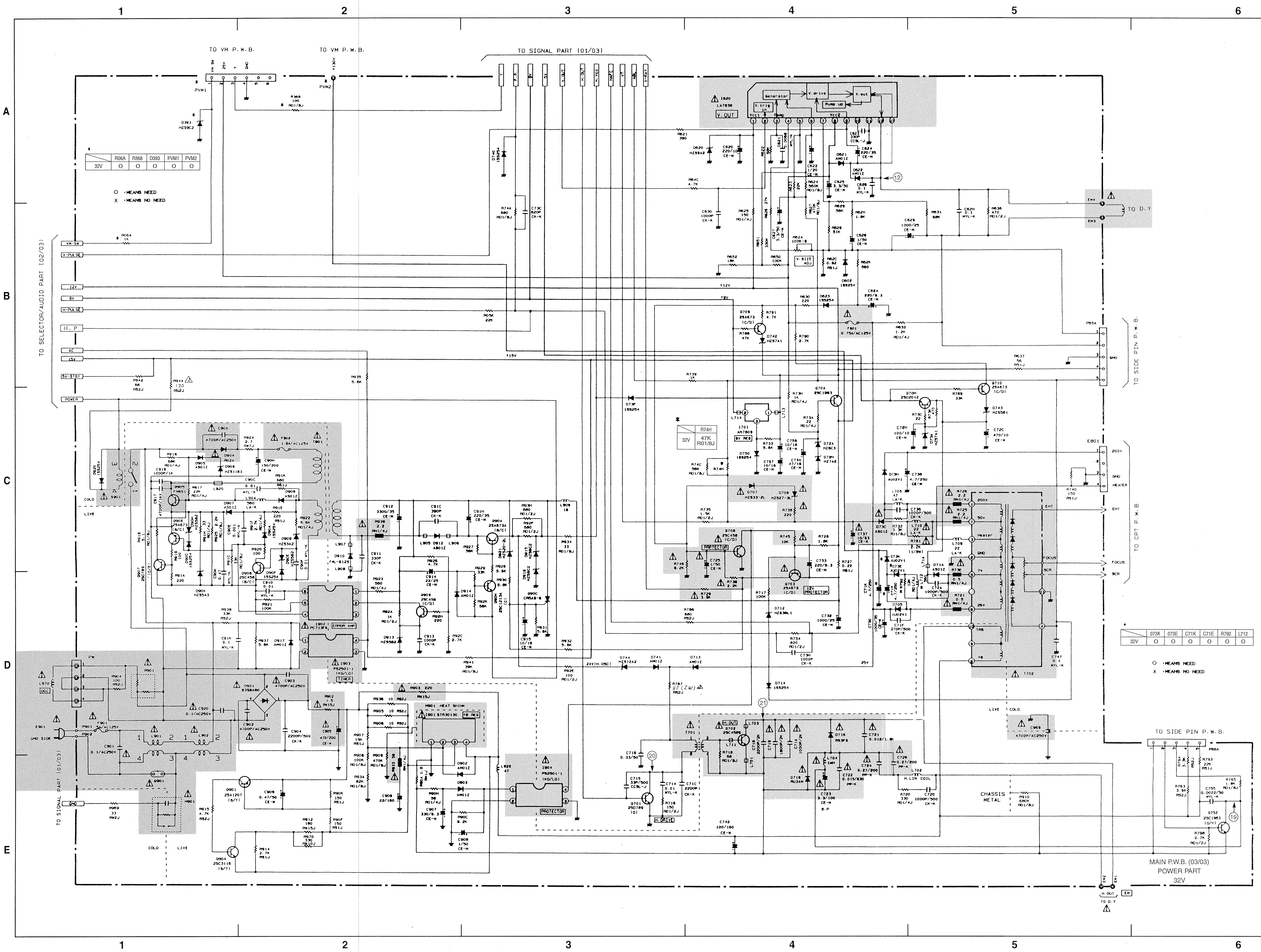
Circuit No.	Pin No.	Voltage VDC
I401	30	3.0
	31	—
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
	39	5.0
	40	4.0
	41	—
	42	5.0

Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0
	13	—
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	—
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
	28	6.0
	29	6.0
	30	6.0

Circuit No.	Pin No.	Voltage VDC
I404	1	6.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	0.0
	7	0.0
	8	0.0
	9	9.5
	10	9.5
	11	6.0
	12	6.0
	13	6.0
	14	6.0
	15	6.0
	16	12.0

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM OF 32CX11B/CY61, 32TX78B/CY60, 32TX79K/CY60


1
2
3
4
5
6
A
B
C
D
E
TO VM P.W.B.
TO VM P.W.B.
TO SIGNAL PART (01/03)
TO SELECTOR/AUDIO PART (02/03)
O :MEANS NEED
X :MEANS NO NEED
TO D.Y
TO SIDE PIN P.W.B.
TO CPT P.W.B.
TO SIGNAL PART (01/03)
COLD
LIVE
PROTECTOR
CHASSIS METAL
TO SIDE PIN P.W.B.
H.OUT
TO D.Y
MAIN P.W.B. (03/03)
POWER PART
32V

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I620	1	1.3
	2	0.9
	3	0.6
	4	0.5
	5	0.0
	6	0.6
	7	0.6
	8	5.0
	9	0.5
	10	0.5
	11	0.0
	12	2.5
	13	5.0

Circuit No.	Pin No.	Voltage VDC
I701	1	12.0
	2	9.0
	3	0.5

Circuit No.	Pin No.	Voltage VDC
I901	1	0.0
	2	130
	3	160
	4	130

Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	—
	4	0.0
	5	2.0
	6	0.0

Circuit No.	Pin -No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0

Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q402	B	2.4
	C	11.0
	E	1.7
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (35V)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

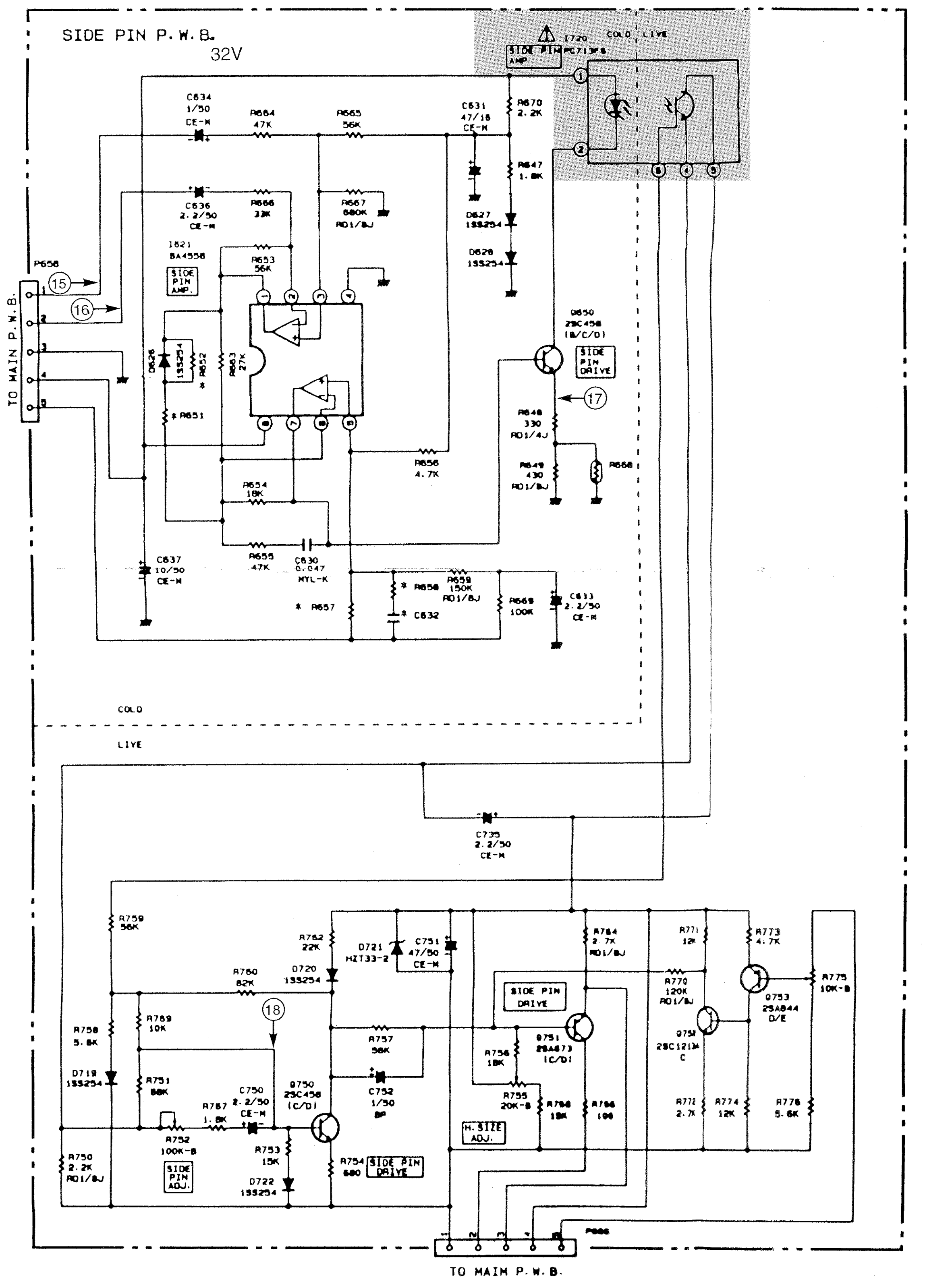
Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM OF 32CX11B/CY61, 32TX78B/CY60, 32TX79K/CY60

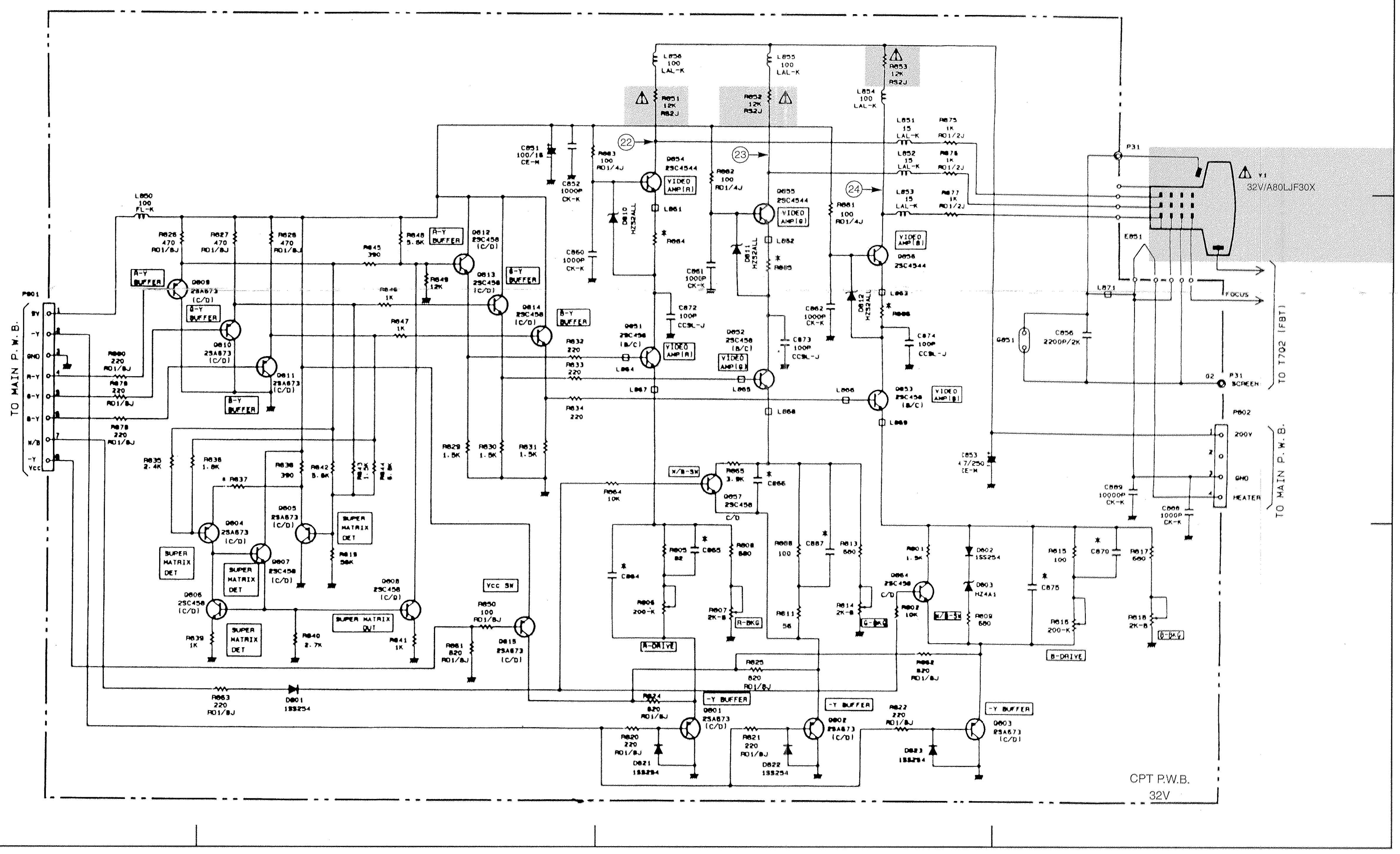
*

	R651	R652	R657	R658	C632
32V	82K	82K	180K R01/8J	22K	0.0047 MYL-K


SIDE PIN P.W.B.
32V
I720 PC713F6
SIDE PIN AMP
COLD
LIVE
I621 BA4558
Q650 2SC458 (B/C/D)
SIDE PIN DRIVE
Q750 2SC458 (C/D)
Q751 2SA673 (C/D)
Q753 2SA844 D/E
Q752 2SC1213 C
H. SIZE ADJ.
SIDE PIN ADJ.
TO MAIN P.W.B.
P658
P666
15
16
17
18

*

			32V
C864			270 CK-K
C865			470 CK-K
C866			180 CK-K
C870			150 CK-K
C875			150 CK-K
C887			150 CK-K
R884			68
R885			68
R886			68
R837			680


CPT P.W.B.
32V
TO MAIN P.W.B.
P801
9V
GND
R-Y
G-Y
B-Y
H/B
VCC
R-Y BUFFER
B-Y BUFFER
G-Y BUFFER
SUPER MATRIX DET
VIDEO AMP(R)
VIDEO AMP(G)
VIDEO AMP(B)
R-DRIVE
G-DRIVE
B-DRIVE
-Y BUFFER
V1 32V/A80LJF30X
FOCUS
SCREEN
TO T702 (FBT)
P31
P802
200V
GND
HEATER
22
23
24

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I621	1	5.0
	2	5.0
	3	5.0
	4	0.0
	5	5.7
	6	5.7
	7	6.2
	8	10.9

Circuit No.	Pin No.	Voltage VDC
I720	1	11.0
	2	9.8
	3	0.0
	4	-56.0
	5	-36.0

Circuit No.	Pin No.	Voltage VDC
Q650 Side P.	B	6.5
	C	9.8
	E	5.6
Q750 Side P.	B	-60.0
	C	-50.0
	E	-60.0
Q751 Side P.	B	-41.0
	C	-60.0
	E	-41.0
Q752 Side P.	B	-60.0
	C	-35.0
	E	-60.0
Q753 Side P.	B	-35.0
	C	-60.0
	E	-35.0

Circuit No.	Pin No.	Voltage VDC
Q801 CPT	B	4.0
	C	0.0
	E	4.0
Q802 CPT	B	3.8
	C	0.0
	E	3.9
Q803 CPT	B	4.0
	C	0.0
	E	4.0
Q804 CPT	B	6.0
	C	1.4
	E	6.4
Q805 CPT	B	5.8
	C	0.0
	E	6.5

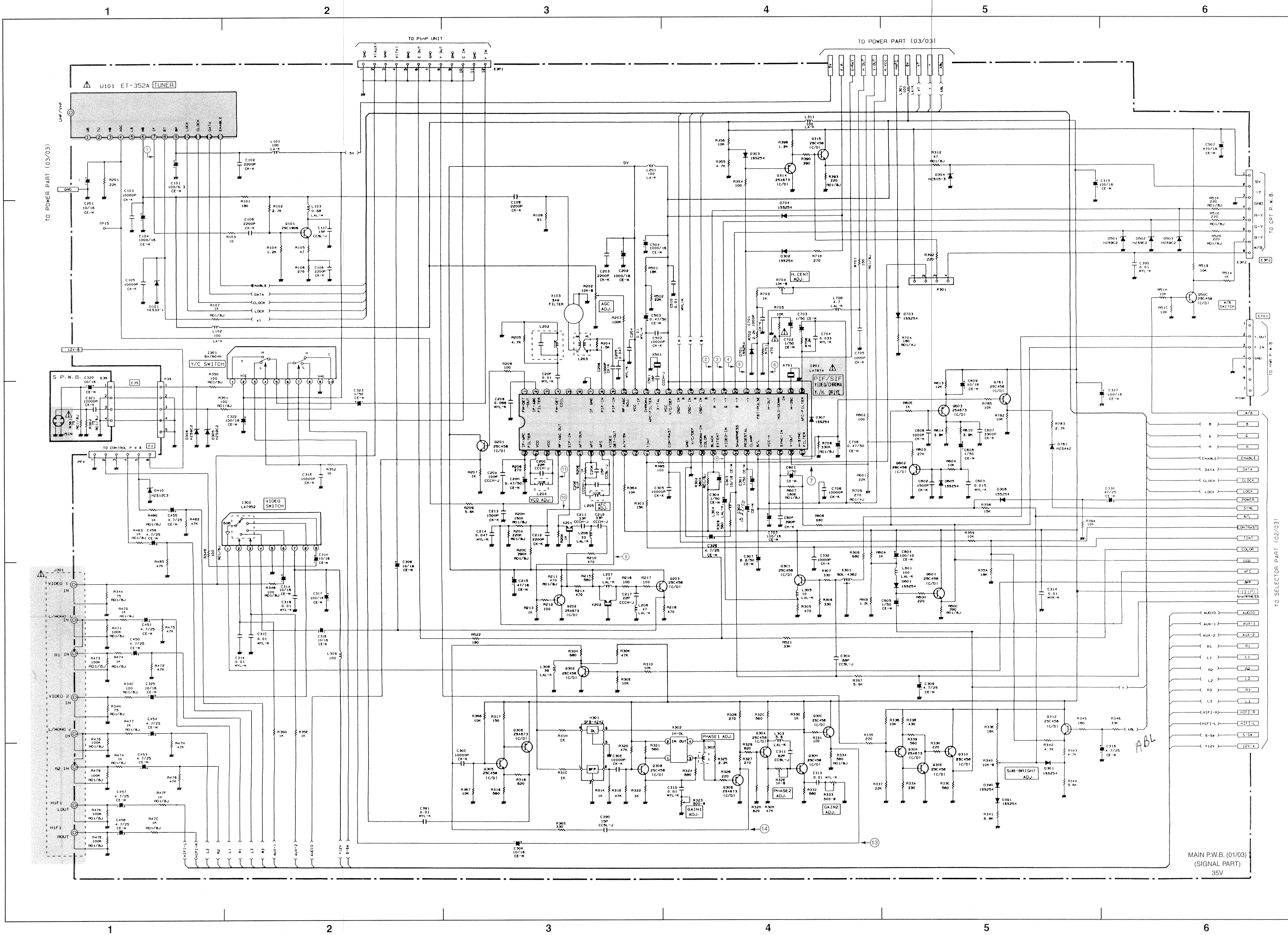
Circuit No.	Pin No.	Voltage VDC
Q806 CPT	B	0.7
	C	1.4
	E	0.0
Q807 CPT	B	1.3
	C	9.0
	E	0.6
Q808 CPT	B	0.9
	C	6.0
	E	0.0
Q809 CPT	B	5.0
	C	0.0
	E	6.0
Q810 CPT	B	5.0
	C	0.0
	E	6.0
Q811 CPT	B	5.0
	C	0.0
	E	6.0
Q812 CPT	B	6.0
	C	9.0
	E	5.0
Q813 CPT	B	6.0
	C	9.0
	E	5.0
Q814 CPT	B	0.9
	C	9.0
	E	0.9
Q815 CPT	B	5.0
	C	3.9
	E	3.9

Circuit No.	Pin No.	Voltage VDC
Q851 CPT	B	5.0
	C	8.0
	E	5.0
Q852 CPT	B	5.0
	C	7.6
	E	4.7
Q853 CPT	B	5.0
	C	8.0
	E	5.0
Q854 CPT	B	1.5
	C	26.0
	E	1.5
Q855 CPT	B	1.2
	C	24.0
	E	1.2
Q856 CPT	B	1.2
	C	24.0
	E	1.2
Q857 CPT	B	4.5
	C	3.9
	E	3.9
Q864 CPT	B	4.6
	C	4.0
	E	4.0

Circuit No.	Pin No.	Voltage VDC
Q0501 Control 35v	B	0.0
	C	0.0
	E	0.0
Q3801 Control 35v	B	3.8
	C	12.0
	E	3.2
Q3802 Control 35v	B	3.6
	C	12.0
	E	3.2

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM 35CX30B/ 35TX88B/ 35TX89K/CZ63


1
2
3
4
5
6
A
B
C
D
E
TO PinP UNIT
TO POWER PART (03/03)
U101 ET-352A TUNER
TO POWER PART (03/03)
TO CPT P.W.B.
TO SELECTOR PART (02/03)
S P.W.B.
TO CONTROL P.W.B.
I301 BA7604N Y/C SWITCH
I302 LA7952 VIDEO SWITCH
I201 LA7687A PIF/SIF VIDEO/CHROMA Y/A DRIVE
AGC ADJ.
VCO ADJ.
AFC ADJ.
H. CENT ADJ.
PHASE1 ADJ.
PHASE2 ADJ.
GAIN1 ADJ.
GAIN2 ADJ.
SUB-BRIGHT ADJ.
Y/C SWITCH
J301
VIDEO 1 IN
L/MONO 1 IN
R1 IN
VIDEO 2 IN
L/MONO 2 IN
R2 IN
HiFi LOUT
HiFi ROUT
ABL
MAIN P.W.B. (01/03)
(SIGNAL PART)
35V

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I201	1	4.4
	2	6.8
	3	5.6
	4	5.6
	5	4.3
	6	4.0
	7	0.0
	8	4.5
	9	4.5
	10	5.8
	11	8.8
	12	5.6
	13	5.4
	14	8.9
	15	0.0
	16	0.0
	17	0.0
	18	5.0
	19	5.0
	20	5.0
	21	4.0
	22	0.4
	23	0.4
	24	0.0
	25	5.0
	26	5.7
	27	7.6
	28	4.5

Circuit No.	Pin No.	Voltage VDC
I201	29	7.0
	30	7.6
	31	4.4
	32	2.7
	33	5.9
	34	4.3
	35	4.2
	36	4.8
	37	0.0
	38	3.5
	39	7.0
	40	4.8
	41	4.1
	42	4.8
	43	8.9
	44	3.2
	45	3.0
	46	3.0
	47	3.3
	48	3.7
	49	1.9
	50	7.9
	51	7.9
	52	4.8

Circuit No.	Pin No.	Voltage VDC
I301	1	2.3
	2	5.0
	3	2.5
	4	0.4
	5	1.7
	6	1.7
	7	0.4
	8	2.5
	9	0.0
	10	2.5

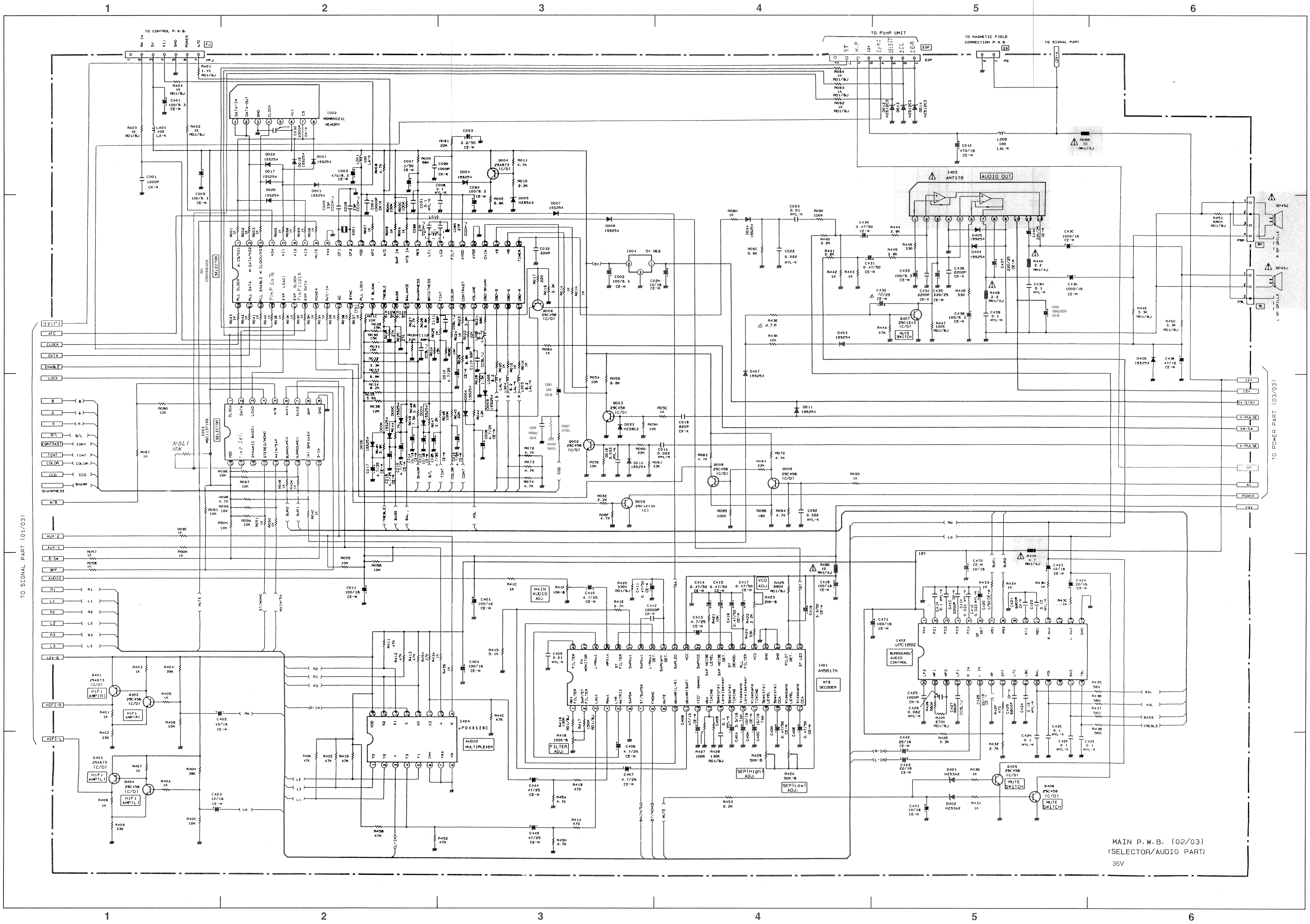
Circuit No.	Pin No.	Voltage VDC
I302	1	6.7
	2	9.4
	3	9.4
	4	3.5
	5	0.0
	6	3.1
	7	11.6
	8	3.1
	9	3.1

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.7
	C	0.0
	E	0.0
Q002	B	0.0
	C	5.0
	E	0.0
Q003	B	0.0
	C	4.2
	E	0.0
Q004	B	5.0
	C	5.0
	E	5.0
Q005	B	0.7
	C	0.0
	E	0.0
Q006	B	0.5
	C	2.0
	E	0.0
Q008	B	0.5
	C	2.8
	E	0.0
Q009	B	0.0
	C	5.0
	E	0.0
Q101	B	2.3
	C	7.5
	E	1.6
Q201	B	4.4
	C	9.0
	E	3.7

Circuit No.	Pin No.	Voltage VDC
Q202	B	3.2
	C	0.0
	E	3.9
Q203	B	6.0
	C	9.0
	E	5.5
Q30A	B	3.0
	C	7.0
	E	2.0
Q30C	B	6.6
	C	9.0
	E	6.0
Q30E	B	0.7
	C	5.0
	E	0.0
Q30H	B	2.3
	C	6.6
	E	1.6
Q30K	B	6.0
	C	0.7
	E	7.0
Q301	B	1.5
	C	9.0
	E	0.5
Q302	B	0.5
	C	0.0
	E	0.0

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM 35CX30B, 35TX88B, 35TX89K/CZ63


1
2
3
4
5
6
A
B
C
D
E
TO CONTROL P.W.B.
TO PinP UNIT
TO MAGNETIC FIELD CORRECTION P.W.B.
TO SIGNAL PART
I002 MSM6002L MEMORY
I001 SELECTOR
I003 MSC1137MS SELECTOR
I004 5V REG
I403 AN7178 AUDIO OUT
I402 uPC1892 SURROUND AUDIO CONTROL
I401 AN5817K MTS DECODER
I404 uPD4052BC AUDIO MULTIPLEXER
MAIN AUDIO ADJ.
FILTER ADJ.
VCO ADJ.
SEP(High) ADJ.
SEP(Low) ADJ.
MUTE SWITCH
HiFi AMP(R)
HiFi AMP(L)
SP452
SP451
TO SIGNAL PART (01/03)
TO POWER PART (03/03)
MAIN P.W.B. (02/03)
(SELECTOR/AUDIO PART)
35V

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I001	1	5.0
	2	5.0
	3	5.0
	4	5.0
	5	12mv
	6	12mv
	7	12mv
	8	-3mv
	9	0.0
	10	2.5
	11	2.5
	12	5.0
	13	2.2
	14	5.0
	15	0.5
	16	0.5
	17	5.0
	18	2.3
	19	2.3
	20	2.5
	21	5.0
	22	0.0
	23	3.0
	24	5.0
	25	4.2
	26	0.0
	27	0.0
	28	0.0

Circuit No.	Pin No.	Voltage VDC
I001	29	0.0
	30	0.0
	31	42mv
	32	7.0
	33	4.4
	34	3.0
	35	2.3
	36	4.1
	37	1.5
	38	1.8
	39	1.8
	40	47mv
	41	120mv
	42	85mv
	43	2.3
	44	5.0
	45	5.0
	46	5.0
	47	0.3
	48	2.5mv
	49	5mv
	50	180mv
	51	5.0
	52	5.0

Circuit No.	Pin No.	Voltage VDC
I002	1	5.0
	2	5.0
	3	0.0
	4	5.0
	5	5.0
	6	5.0
	7	5.0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0.3
	2	5.0
	3	2.4mv
	4	5.0
	5	1.5mv
	6	9.5
	7	9.5
	8	0.0
	9	0.0
	10	1.2mv
	11	3.5mv
	12	0.0
	13	0.0
	14	5.0
	15	3.5
	16	——
	17	——
	18	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	15.0
	2	5.0
	3	0.0

Circuit No.	Pin No.	Voltage VDC
I403	1	5.3
	2	9.9
	3	15.0
	4	0.0
	5	10.5
	6	5.8
	7	1.3
	8	0.0
	9	0.0
	10	12.0
	11	0.0
	12	1.3

Circuit No.	Pin No.	Voltage VDC
I401	1	1.2
	2	1.2
	3	5.0
	4	5.0
	5	5.0
	6	0.0
	7	5.0
	8	3.5
	9	——
	10	4.5
	11	5.0
	12	5.0
	13	1.2
	14	5.0
	15	0.3
	16	5.0
	17	0.6
	18	8.0
	19	5.0
	20	8.0
	21	5.0
	22	0.0
	23	7.0
	24	0.0
	25	0.0
	26	8.3
	27	5.0
	28	5.0
	29	3.0

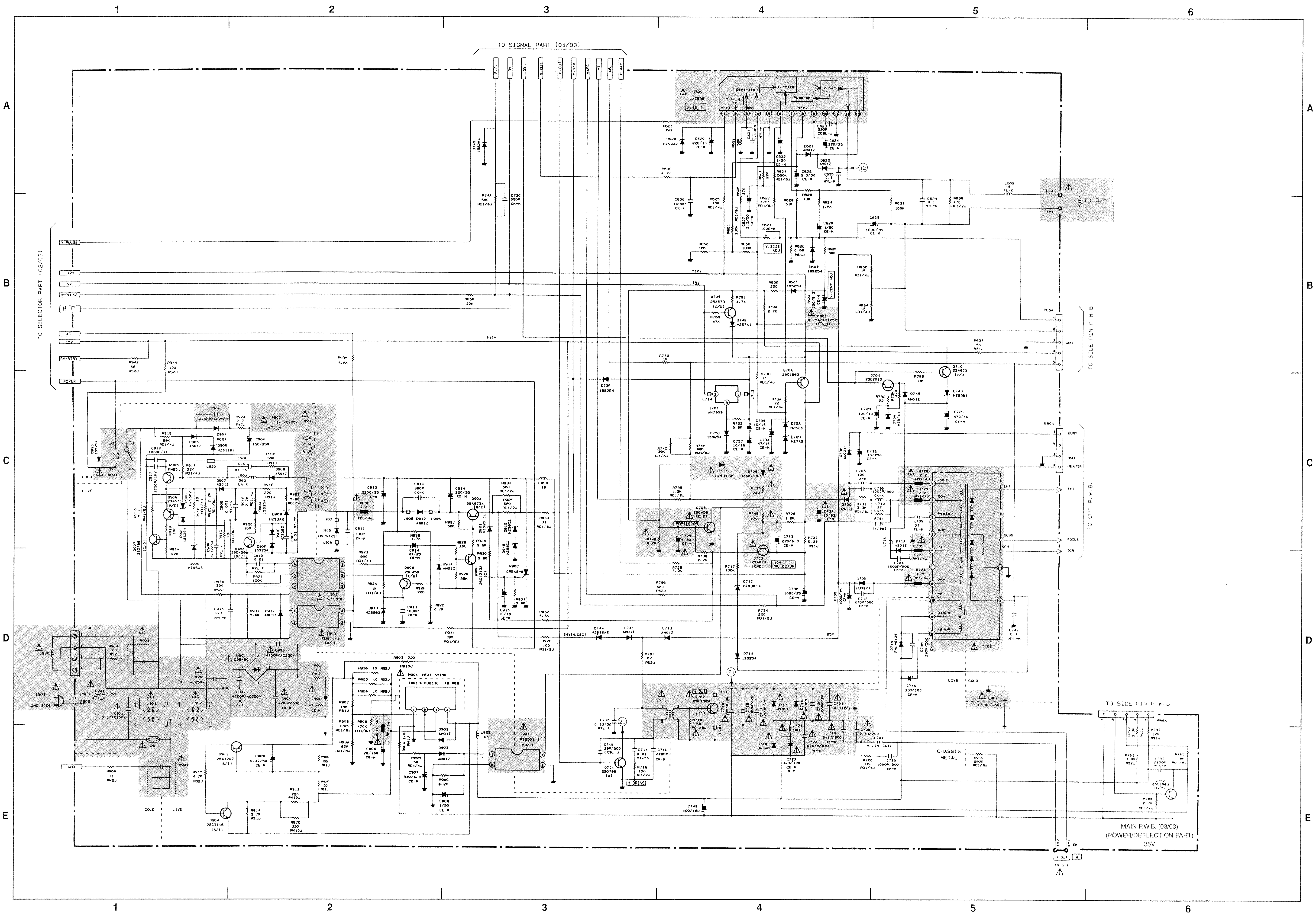
Circuit No.	Pin No.	Voltage VDC
I401	30	3.0
	31	——
	32	9.5
	33	0.0
	34	3.8
	35	4.5
	36	0.5
	37	3.8
	38	4.2
	39	5.0
	40	4.0
	41	——
	42	5.0

Circuit No.	Pin No.	Voltage VDC
I402	1	12.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	6.0
	7	0.0
	8	0.0
	9	6.0
	10	6.0
	11	6.0
	12	6.0
	13	——
	14	6.0
	15	0.0
	16	3.0
	17	3.0
	18	——
	19	0.0
	20	2.2
	21	6.0
	22	6.0
	23	5.2
	24	6.0
	25	6.0
	26	6.0
	27	6.0
	28	6.0
	29	6.0
	30	6.0

Circuit No.	Pin No.	Voltage VDC
I404	1	6.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	0.0
	7	0.0
	8	0.0
	9	9.5
	10	9.5
	11	6.0
	12	6.0
	13	6.0
	14	6.0
	15	6.0
	16	12.0

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM 35CX30B, 35TX88B, 35TX89K/CZ63


1
2
3
4
5
6
A
B
C
D
E
TO SIGNAL PART (01/03)
TO SELECTOR PART (02/03)
Y-PULSE
12V
9V
H-PULSE
H.P
AC
15V
5V-STBY
POWER
I620 LA7838
V.OUT
Generator
V.drive
V.out
V.trig
Pump up
V.SIZE ADJ
TO D.Y
TO SIDE PIN P.W.B.
TO CPT P.W.B.
200V
GND
HEATER
EHT
FOCUS
SCR
PROTECTOR
12V PROTECTION
H.OUT
T702
T701
H.LIN COIL
CHASSIS METAL
COLD
LIVE
GND SIDE
HEAT SHINK
MAIN P.W.B. (03/03)
(POWER/DEFLECTION PART)
35V
TO D.Y

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I620	1	1.3
	2	0.9
	3	0.6
	4	0.5
	5	0.0
	6	0.6
	7	0.6
	8	5.0
	9	0.5
	10	0.5
	11	0.0
	12	2.5
	13	5.0

Circuit No.	Pin No.	Voltage VDC
I701	1	12.0
	2	9.0
	3	0.5

Circuit No.	Pin No.	Voltage VDC
I901	1	0.0
	2	130
	3	160
	4	130

Circuit No.	Pin No.	Voltage VDC
I902	1	14.0
	2	13.0
	3	——
	4	0.0
	5	2.0
	6	0.0

Circuit No.	Pin No.	Voltage VDC
I903	1	1.2
	2	0.5
	3	0.5
	4	0.0

Circuit No.	Pin No.	Voltage VDC
I904	1	-60.0
	2	-60.0
	3	0.0
	4	15.0

Circuit No.	Pin No.	Voltage VDC
Q305	B	4.0
	C	8.0
	E	4.0
Q306	B	8.0
	C	9.0
	E	5.0
Q308	B	4.0
	C	7.0
	E	3.0
Q309	B	3.5
	C	0.0
	E	4.0
Q310	B	5.0
	C	9.0
	E	4.6
Q312	B	10.0
	C	9.0
	E	9.0
Q314	B	4.0
	C	0.0
	E	4.5
Q315	B	4.5
	C	9.0
	E	3.8
Q401	B	12.0
	C	6.5
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q402	B	2.4
	C	11.0
	E	1.7
Q403	B	12.0
	C	6.0
	E	12.0
Q404	B	2.4
	C	11.0
	E	1.7
Q405	B	0.5
	C	0.0
	E	0.0

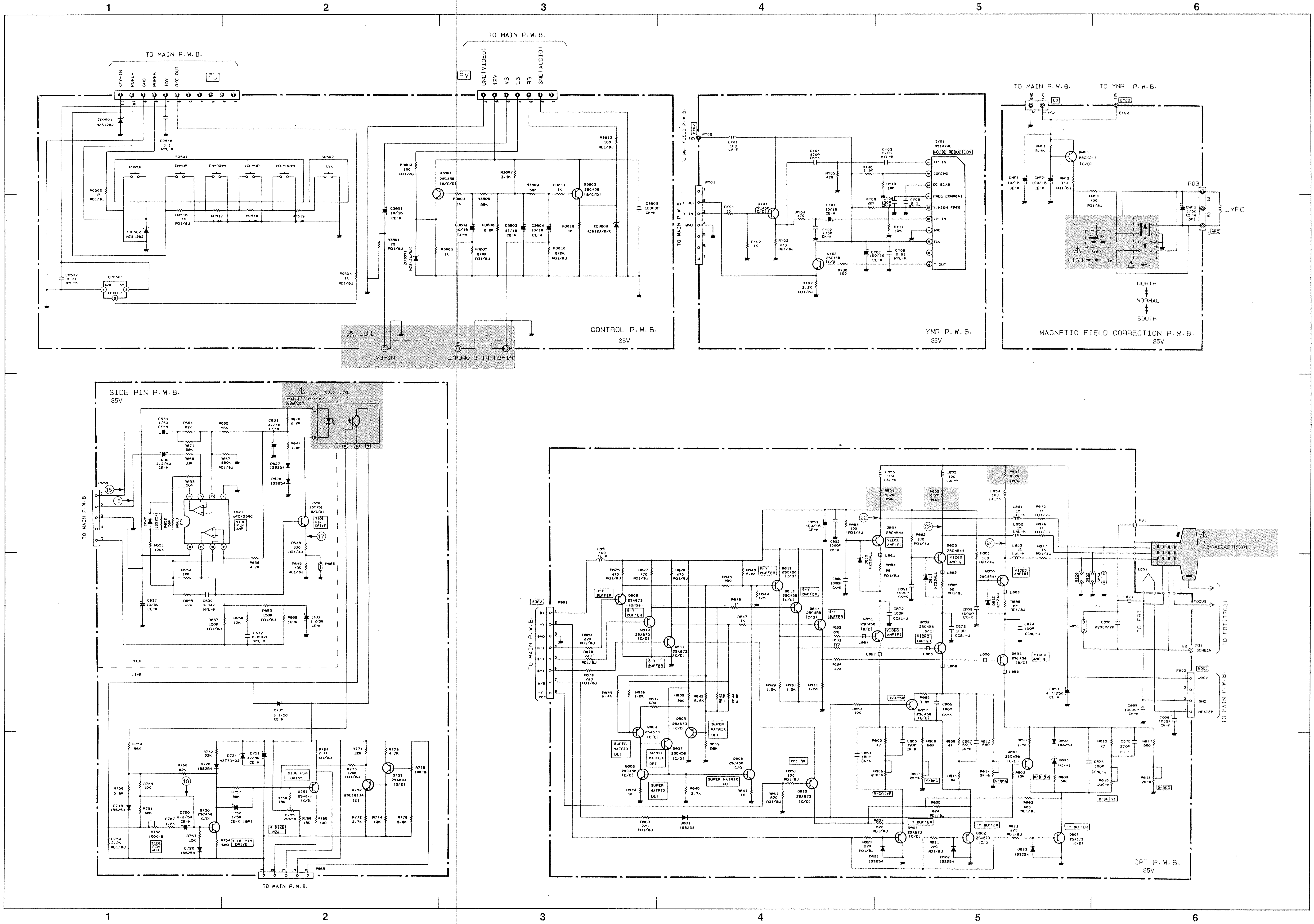
Circuit No.	Pin No.	Voltage VDC
Q406	B	0.5
	C	0.0
	E	0.0
Q407	B	0.0
	C	15.0
	E	0.0
Q50C	B	0.0
	C	6.5
	E	0.0
Q601	B	5.2
	C	9.0
	E	4.5
Q602	B	0.0
	C	4.4
	E	0.0
Q603	B	5.0
	C	1.3
	E	4.5
Q70A	B	12.0
	C	15.0
	E	12.0

Circuit No.	Pin No.	Voltage VDC
Q70H	B	5.7
	C	7.5
	E	5.0
Q701	B	0.3
	C	17.0
	E	0.0
Q702	B	-60.0
	C	41.0
	E	-60.0
Q703	B	15.0
	C	0.0
	E	15.0
Q708	B	0.0
	C	15.0
	E	0.0
Q709	B	9.0
	C	0.0
	E	8.0
Q710	B	5.0
	C	0.0
	E	5.0
Q752 (35V)	B	-60.0
	C	-44.0
	E	-60.0
Q761	B	7.6
	C	9.0
	E	7.0

Circuit No.	Pin No.	Voltage VDC
Q90A	B	40.0
	C	11.0
	E	40.0
Q90C	B	0.0
	C	15.0
	E	0.0
Q90H	B	0.0
	C	40.0
	E	0.0
Q901	B	57.0
	C	57.0
	E	57.0
Q904	B	33.0
	C	34.0
	E	33.0
Q905	B	0.0
	C	122.0
	E	0.0
Q906	B	0.0
	C	0.5
	E	0.5
Q907	B	0.0
	C	0.5
	E	0.0
Q908	B	0.0
	C	2.0
	E	0.0
Q909	B	5.5
	C	12.0
	E	5.5

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM 35CX30B, 35TX88B, 35TX89K/CZ63


1
2
3
4
5
6
A
B
C
D
E
TO MAIN P.W.B.
FJ
FV
TO MAIN P.W.B.
TO YNR P.W.B.
CONTROL P.W.B.
35V
⚠ J01
V3-IN
L/MONO 3 IN
R3-IN
YNR P.W.B.
35V
LMFC
HIGH
LOW
NORTH
NORMAL
SOUTH
MAGNETIC FIELD CORRECTION P.W.B.
35V
SIDE PIN P.W.B.
35V
COLD
LIVE
TO MAIN P.W.B.
CPT P.W.B.
35V
35V/A89AEJ15X01
FOCUS
SCREEN
TO FBT
TO FBT(T702)
TO MAIN P.W.B.

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I621	1	5.0
	2	5.0
	3	5.0
	4	0.0
	5	5.7
	6	5.7
	7	6.2
	8	10.9

Circuit No.	Pin No.	Voltage VDC
I720	1	11.0
	2	9.8
	3	0.0
	4	-56.0
	5	-36.0

Circuit No.	Pin No.	Voltage VDC
Q650 Side P.	B	6.5
	C	9.8
	E	5.6
Q750 Side P.	B	-60.0
	C	-50.0
	E	-60.0
Q751 Side P.	B	-41.0
	C	-60.0
	E	-41.0
Q752 Side P.	B	-60.0
	C	-35.0
	E	-60.0
Q753 Side P.	B	-35.0
	C	-60.0
	E	-35.0

Circuit No.	Pin No.	Voltage VDC
Q801 CPT	B	4.0
	C	0.0
	E	4.0
Q802 CPT	B	3.8
	C	0.0
	E	3.9
Q803 CPT	B	4.0
	C	0.0
	E	4.0
Q804 CPT	B	6.0
	C	1.4
	E	6.4
Q805 CPT	B	5.8
	C	0.0
	E	6.5

Circuit No.	Pin No.	Voltage VDC
Q806 CPT	B	0.7
	C	1.4
	E	0.0
Q807 CPT	B	1.3
	C	9.0
	E	0.6
Q808 CPT	B	0.9
	C	6.0
	E	0.0
Q809 CPT	B	5.0
	C	0.0
	E	6.0
Q810 CPT	B	5.0
	C	0.0
	E	6.0
Q811 CPT	B	5.0
	C	0.0
	E	6.0
Q812 CPT	B	6.0
	C	9.0
	E	5.0
Q813 CPT	B	6.0
	C	9.0
	E	5.0
Q814 CPT	B	0.9
	C	9.0
	E	0.9
Q815 CPT	B	5.0
	C	3.9
	E	3.9

Circuit No.	Pin No.	Voltage VDC
Q851 CPT	B	5.0
	C	8.0
	E	5.0
Q852 CPT	B	5.0
	C	7.6
	E	4.7
Q853 CPT	B	5.0
	C	8.0
	E	5.0
Q854 CPT	B	1.5
	C	26.0
	E	1.5
Q855 CPT	B	1.2
	C	24.0
	E	1.2
Q856 CPT	B	1.2
	C	24.0
	E	1.2
Q857 CPT	B	4.5
	C	3.9
	E	3.9
Q864 CPT	B	4.6
	C	4.0
	E	4.0

Circuit No.	Pin No.	Voltage VDC
Q0501 Control 35v	B	0.0
	C	0.0
	E	0.0
Q3801 Control 35v	B	3.8
	C	12.0
	E	3.2
Q3802 Control 35v	B	3.6
	C	12.0
	E	3.2

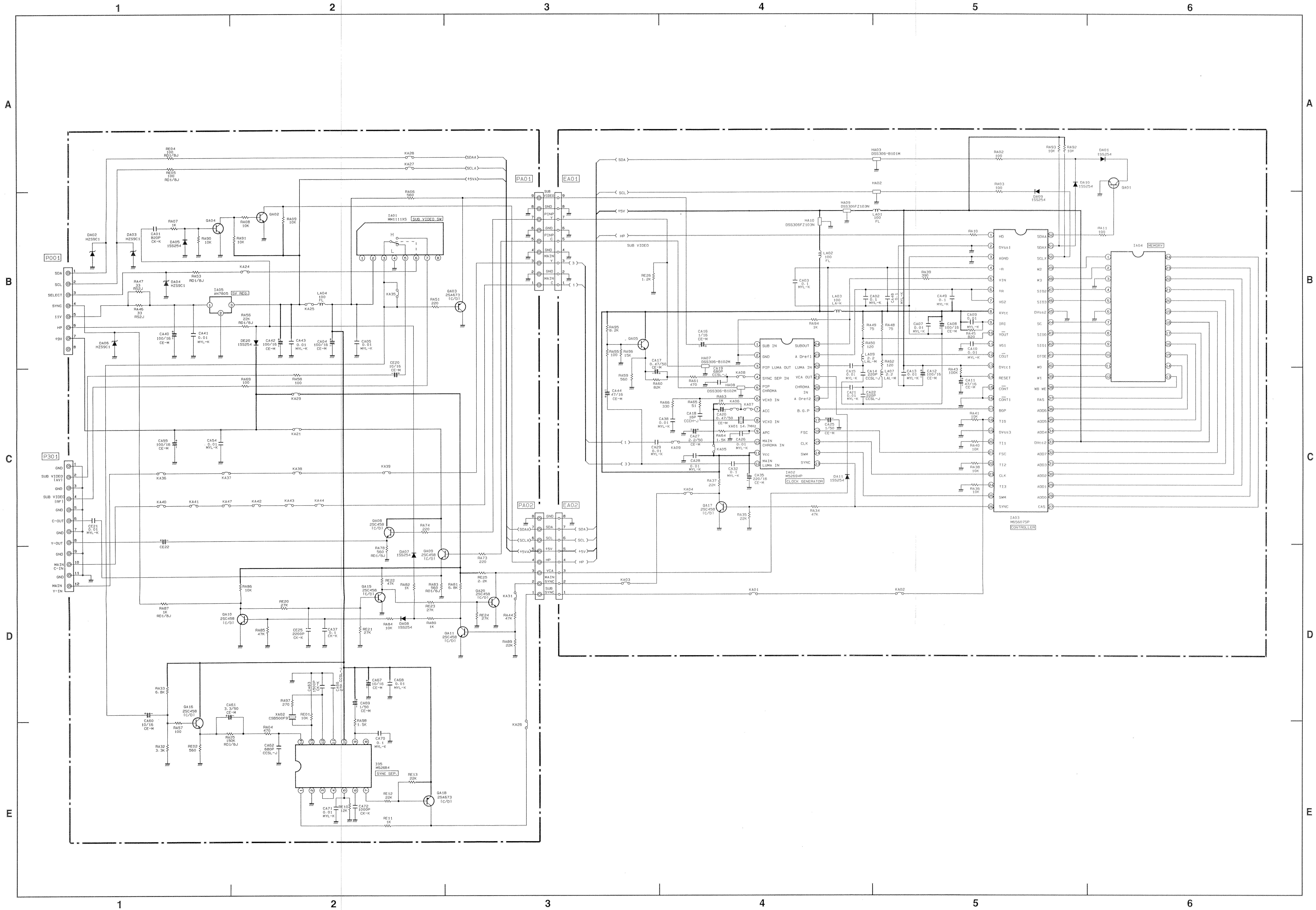
Circuit No.	Pin No.	Voltage VDC
QMF1	B	9.6
	C	10
	E	9

Circuit No.	Pin No.	Voltage VDC
QY01 YNR	B	2.2
	C	0.5
	E	1.5
QY02 YNR	B	7.4
	C	10.2
	E	6.7

Circuit No.	Pin No.	Voltage VDC
IY01	1	4.2
	2	8.4
	3	4.1
	4	3.4
	5	3.4
	6	4.3
	7	0
	8	10
	9	7.2
	10	7.3

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

CIRCUIT SCHEMATIC DIAGRAM OF P in P


1
2
3
4
5
6
A
B
C
D
E
P001
SDA
SCL
SELECT
SYNC
11V
HP
+9V
P301
GND
SUB VIDEO (AV)
GND
SUB VIDEO (RF)
GND
C-OUT
GND
Y-OUT
GND
MAIN C-IN
GND
MAIN Y-IN
IA01 MM1111XS SUB VIDEO SW
IA05 AN7805 5V REG.
PA01
EA01
PA02
EA02
SUB VIDEO
IA02 M52694P CLOCK GENERATOR
IA03 M50607SP CONTROLLER
IA04 MEMORY
I05 M52684 SYNC SEP.

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.

Circuit No.	Pin No.	Voltage VDC
I05	1	0.85
	2	0
	3	0.99
	4	0.99
	5	0.94
	6	0.39
	7	4.16
	8	3.8
	9	2.6
	10	5
	11	2
	12	2
	13	2.8
	14	3

Circuit No.	Pin No.	Voltage VDC
IA01	1	0
	2	5
	3	1.9
	4	0
	5	2.75
	6	3
	7	2.7
	8	0

Circuit No.	Pin No.	Voltage VDC
IA02	1	2.9
	2	1.8
	3	1.7
	4	3
	5	1.29
	6	3.3
	7	4.1
	8	2.8
	9	2.4
	10	2.8
	11	5
	12	3.4
	13	1.1
	14	0
	15	1.6
	16	1.8
	17	2.3
	18	0
	19	2.5
	20	2.5
	21	2.8
	22	3.2
	23	3.7
	24	2.9

Circuit No.	Pin No.	Voltage VDC
IA03	1	0.6
	2	0
	3	0
	4	2.5
	5	3
	6	3.7
	7	3.7
	8	5
	9	3.7
	10	4.2
	11	2
	12	4.5
	13	5
	14	5
	15	0
	16	0
	17	0
	18	0
	19	0
	20	5
	21	1.8
	22	0
	23	1.6
	24	0
	25	0
	26	1
	27	4
	28	2

Circuit No.	Pin No.	Voltage VDC
IA03	29	2.3
	30	2.7
	31	2.8
	32	0.5
	33	5
	34	2.8
	35	2.8
	36	2.3
	37	3.7
	38	3.8
	39	2.2
	40	1.7
	41	5
	42	1.5
	43	3
	44	0.5
	45	0
	46	1
	47	0
	48	1
	49	1.9
	50	4.9
	51	5
	52	0

Circuit No.	Pin No.	Voltage VDC
IA04	1	1.8
	2	1
	3	0
	4	2
	5	0.9
	6	0
	7	0.5
	8	2.9
	9	1
	10	5
	11	1.8
	12	2.2
	13	3.8
	14	3.7
	15	2.3
	16	2.8
	17	2.8
	18	5
	19	0.5
	20	2.8
	21	2.7
	22	2.3
	23	1.9
	24	4.1

Circuit No.	Pin No.	Voltage VDC
IA05	1	7
	2	0
	3	5

Circuit No.	Pin No.	Voltage VDC
QA01 PinP	B	0
	C	5
	E	0
QA02 PinP	B	0.5
	C	0.6
	E	0
QA03 PinP	B	1.9
	C	0
	E	2.6
QA04 PinP	B	0
	C	2.3
	E	0
QA05 PinP	B	3
	C	5
	E	2.3
QA06 PinP	B	1.7
	C	8.9
	E	1.1
QA07 PinP	B	1.3
	C	8.9
	E	0.6
QA08 PinP	B	0.6
	C	0
	E	0
QA09 PinP	B	0.6
	C	0.7
	E	0

Circuit No.	Pin No.	Voltage VDC
QA16 PinP	B	1.6
	C	5
	E	0.9
QA17 PinP	B	0.3
	C	3.1
	E	0
QA18 PinP	B	4.5
	C	0.8
	E	5
QA19 PinP	B	0
	C	3.7
	E	0
QA20 PinP	B	0.7
	C	0
	E	0